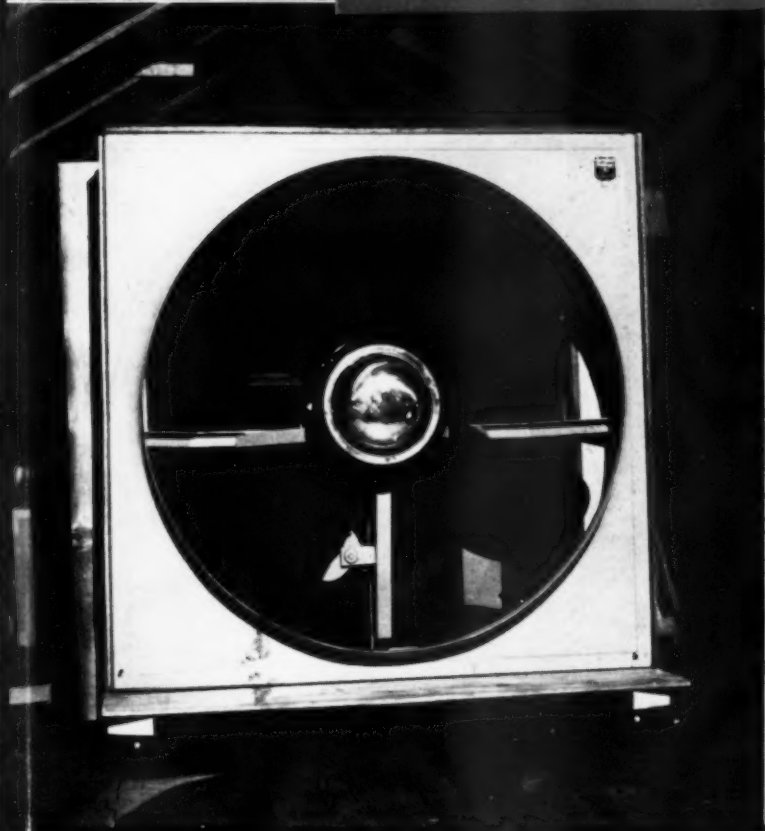


AMERICAN ARTISAN

RESIDENTIAL AIR CONDITIONING
WARM AIR HEATING -- SHEET METAL CONTRACTING



JULY, 1947

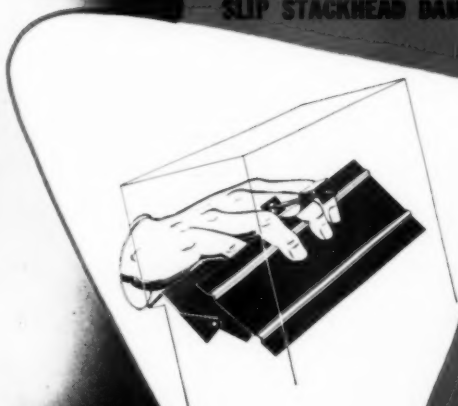
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AIR CONTROL STACKHEAD DAMPERS

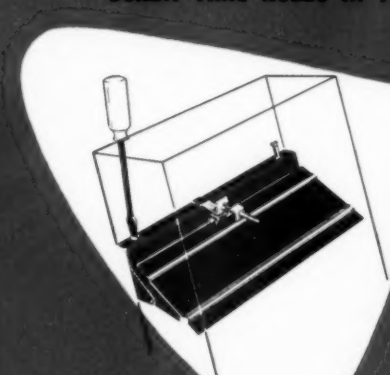
Give you micrometer adjustment on your forced air installation



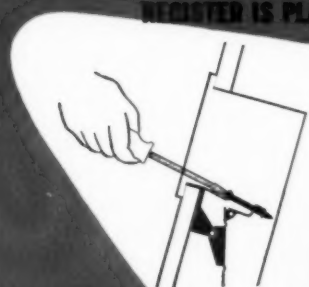
SLIP STACKHEAD DAMPER IN PLACE



SCREW THRU HOLES IN TOP FLANGE



ADJUST BEFORE OR AFTER REGISTER IS PLACED IN WALL



Just one man with a screw driver and a volumemeter or thermometer, can balance out a heating system to micrometer accuracy. The butterfly damper is adjusted by means of screw mechanism that gives positive and accurate control of the air volume.

AIR CONTROL Stackhead Dampers are installed in the stackhead throat. It is a completely assembled unit that needs no locating holes or alignment. Just place it in the stackhead and secure in place with two screws, or it may be attached to stackhead in your shop with two rivets.

Saves time! One man does the work of two—Saves money!—costs less than the parts and labor on the old type basement style damper, offers less air resistance and gives even air distribution across face of register. Can be easily installed on old installations where a troublesome run needs dampering.

Available for any standard stackhead. Sizes 8", 10", 12" (use 2 in 24" head) 14", 15" (use 2 in 30" head).

See your AIR CONTROL Jobber today—he has them in stock, along with AIR CONTROL'S complete line of Registers, Grilles, Floor Registers, etc.

AIR CONTROL PRODUCTS, INC.
COOPERSVILLE MICHIGAN

There is no substitute for Natural Hair



Herbert the Hare says:

"You'll clean up

with this NEW WILSON'S AIR FILTER DISPLAY...

it's a sales maker for sure"



You can make more sales and more filter profits than ever selling Wilson's Hair Filters if you use this striking new display. The public goes for this Wilson *replacement* air filter—because it has more selling points—a great name. It's a natural, just as *hair* is the *natural* element for superior filtering. Get this new, striking display. Set it up. Watch interest and sales *increase*. Your jobber has the new display piece, also the filters to complete the set up. Contact him.

Wilson & Co., Inc.
(Air Filter Division)

A PRODUCT OF
WILSON & CO.
VINC

4100 S. Ashland Ave.
Chicago 9, Ill.



Western States Representatives:—HAROLD WINNINGHAM & COMPANY • SEATTLE • SAN FRANCISCO • LOS ANGELES • SALT LAKE CITY • DENVER • EL PASO



AMERICAN

with which are merged
FURNACES
SHEET METALS
Warm-Air Heating

Covering All Activities in Residential Air Conditioning and Small Commercial Cooling, Warm Air Heating, Sheet Metal Contracting and Fabricating

ARTISAN

In This Issue

J. D. Wilder, Editor

J. J. McCullough, Associate Editor A. A. Kennedy, Assistant Editor

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matter, July 29, 1932, at the post office at Chicago, Illinois, under the act of
March 3, 1879.

THE Taft-Hartley Bill has been the subject of the most violent argu-
ing of any piece of legislation in recent
years. The hysteria that has been
stirred up by the unions seems hardly
justified in the cold light of reason
and on Page 57 AA offers a picture
of the effect of the bill on your in-
dustry.

Much has been written and printed
about proper heating procedures but
the subject of cooling has been rather
a neglected step-child. This phase of
air conditioning is of great potential
interest to our field and the article
on page 69 offers a possible solution
to the problem of high cost of cooling
units.

Another in the Artisan series of
panel heating articles is to be found
on page 77. A ceiling panel installa-
tion at the Majestic Furnace Com-
pany. Tests of this system are valu-
able addition to the increasing amount
of data on heating by means of warm
air panels.

June Meeting of the National Warm
Air Heating and Air Conditioning As-
sociation provided the background for
the formal dedication of Research Resi-
dence #2, marking another important
step in the history of service to the
industry by the Association.

Founded 1880

JULY, 1947

Volume 116, No. 7

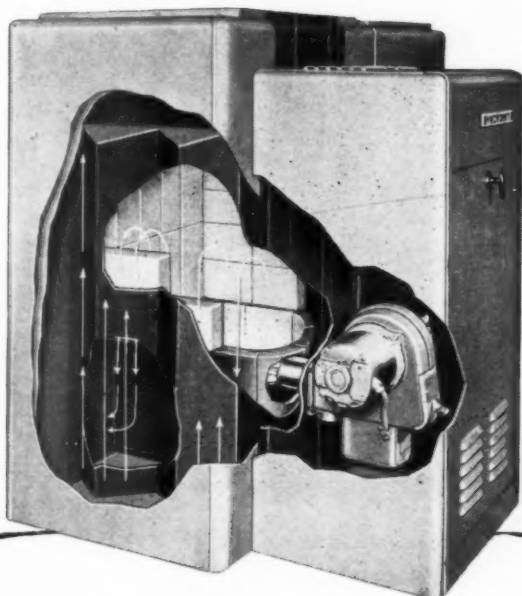
SYNCHROMATIC

WARM-AIR FURNACES FOR COAL
OIL AND GAS *Can't be Equaled*

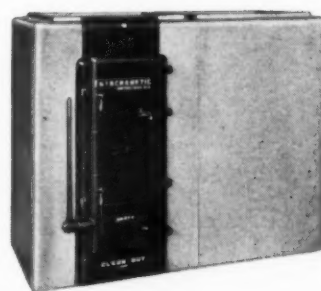


GAS-FIRED

Beauty... Simplicity
Economy...
Efficiency



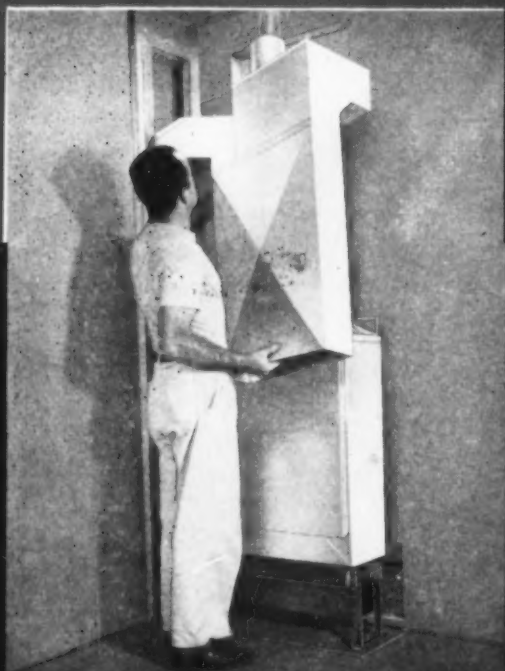
OIL-FIRED SECTION
Showing COUNTER FLOW Principle



COAL-FIRED

*An Engineering Design
Only Syncromatic
Can Offer*

Syncromatic Corporation
WATERTOWN, WISCONSIN



ROYAL JET-FLOW

Out-performs heating units costing three times as much

Jet-Flow is new . . . different . . . easy to sell . . . easy to install. A real profit maker . . . summer or winter. Royal Jet-Flow gives advantages of forced air circulation, plus ceiling radiation—truly two-way heating. Cost no more installed than conventional wall heaters or floor furnaces. Ideal for track work.

SEND COUPON TODAY

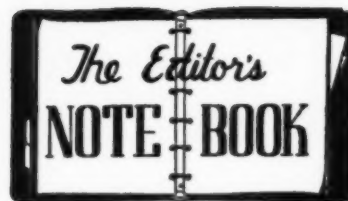
ROYAL HEATERS INC., 1024 Westminster Ave., Alhambra Calif.

Please, send me, without obligation. Results of comparative heating tests; specifications and prices of Royal Jet-Flow.

NAME _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____



Power Plus

"Every now and then, when you get ready to haul off and say something nasty about a 'union leader,'" a reader wrote recently to the editor of a large Eastern paper, "you seem to feel that it is necessary to soften the lick by reminding your readers that 'big business' used to be pretty wet around the nose, too. . . ."

"Yet, when you review the situation, I do not believe there is a case on record where one businessman ever had the power—or if he had it, ever used the power—completely to strip the country's industrial gears—the power to close stores and hospitals, to stop trains, to dim out whole cities and sections, to cause thousands of people in remote parts of the country to be thrown out of jobs; to bring about suffering and hardship, to threaten starvation, disease and disaster."

Your Burden

Suppose by some miracle, taxes were abolished.

If this miracle took place, the average American family's income would automatically be increased by 30 per cent!

The married man whose net income was \$5,000 last year, paid 173 times as much in Federal income taxes as he would have had to pay on the same income in 1929.

The \$7,000 man paid 120 times as much; the \$10,000 man 49 times as much.

But this is only part of the story.

All these men paid other Federal taxes at vastly increased rates. Nuisance taxes imposed on hundreds of items they purchased—ranging from electric light bulbs to cigarettes—were more than 12 times those imposed in 1929.

The national income, upon which taxes have increased 13 fold, has not even doubled. The total receipts of the Federal Treasury are approximately 13 times as much as the boom year of 1929.

Today, on the average, each family in the U. S. is paying \$1,300 in taxes, direct and indirect, to Federal, State and local governments.

Houseboat Houses Veteran

Enterprising—or desperate—veterans have probably used most every type of accommodation to find housing—old railroad and streetcar bodies, Quonset huts, converted barns and garages, chicken coops,—but a Cleveland veteran found his solution in a three-room houseboat which not only houses him, but also eliminates the problem of a lot. The houseboat is an all-steel, welded structure which required some 4,000 hours of welding to complete the hull and super-structure. The cost was about \$5,000.

**better
equipment
builds
easier
sales**

**AVAILABLE
NOW
Complete with Burner**

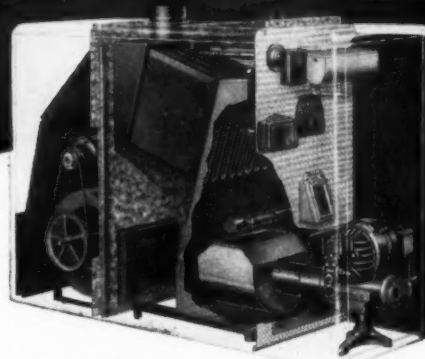


MEYER OIL-FIRED AIR CONDITIONER

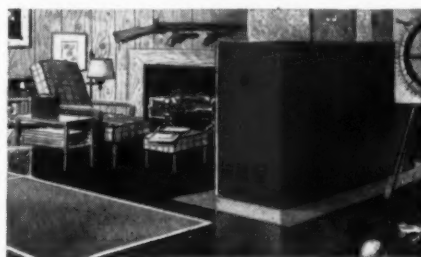
Here's today's best answer to the demand for fully automatic home heating! Immediate combustion is achieved by exclusive and proven stainless steel combustion chamber. Makes installation easy! Special tubular heating element for more efficient heat interchange. Air is heated, filtered, humidified, and positively circulated. Mechanical cooling may be included at time of installation or later. WEIR-MEYER equipment is available on a profit-protecting franchise. Write — your area may be "open."

THE MEYER FURNACE COMPANY

Manufacturers of steel furnaces and air conditioners
for **GAS-OIL-COAL**. Offices: Peoria 2, Ill.
Factories: Peoria and Peru, Illinois



The MEYER is modern inside and out! Its stream-lined beauty is matched by its efficient performance. Heating section welded into one integral unit—no chance for any smoke or fumes to leak into the air stream.



WEIR-MEYER means modern heat



Gas-fired
Hi-boy



Gas-fired
Air Conditioner



Gas-fired
Gravity



Oil-fired
Hi-boy



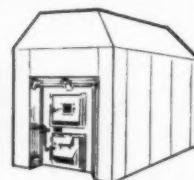
Oil-fired
Air Conditioner



Weir
Steel furnace

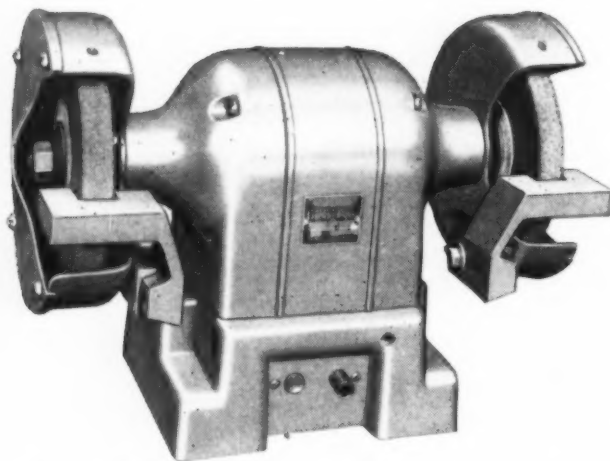


Coal-fired
Air Conditioner



Industrial & commercial
heating equipment

NEW 6" HEAVY-DUTY BENCH GRINDER



for FASTER Tool Sharpening ... Grinding ... Wire Brushing

From streamlined housing to internal engineering, the new Black & Decker 6" Heavy-Duty Bench Grinder is designed to turn out better work, faster! Keeps a keen cutting edge on all your tools . . . grinds pipe, rings, connections, fixtures, etc. . . . wire-brushes, buffs, burnishes, polishes and finishes sheet metal . . . removes weld marks and saw or shear burrs.

READ THESE FACTS ON THIS USEFUL TOOL

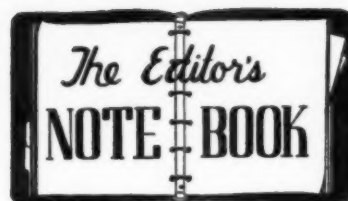
- Modern, streamlined, die-cast housings improve working clearances and decrease weight.
- Powerful "constant-speed" B & D-built motor, mounted on ball bearings, maintains high operating speed under load.
- Steel wheel guards and covers give extra protection. Ample room for standard three-section wire wheel brush without changing the guard.
- U-shaped tool rests fit around grinding wheel for improved support in tool sharpening. Adjustable for wheel wear.
- Machined hole in base of Grinder provides for mounting attachments.
- Two-pole push-button switch is recessed in housing to prevent accidental contact, yet remains easy to reach.

Study the important facts on this tool shown above. Then ask your nearby Black & Decker Distributor for full details on these useful new Bench Grinders and other Portable Electric Tools for heating, piping and air conditioning work. Write today for your free copy of our catalog to: The Black & Decker Mfg. Co., 682 Pennsylvania Ave., Towson 4, Maryland.

LEADING DISTRIBUTORS  EVERYWHERE SELL

Black & Decker

PORTABLE ELECTRIC TOOLS



Infiltration Question

In the February issue Mitchel Landau wrote an article describing a short cut method for heat loss calculation. A reader asked how the figure 4,280 cfh for infiltration was obtained. Mr. Landau replied as follows:

The figure of 4,280 cfh was calculated by taking the crackage around the windows and the door. Each window has 19 ft. of cracks, making a total of 57 ft., which was multiplied by 40 cfh. The door has 20 linear ft. which was multiplied by 100 cfh. Thus, we have 2,280 cfh for the windows, and 2,000 cfh for the door, making a total of 4,280 cfh.

The figure of 40 for the windows was taken from the ASH&VE Guide, 1947 edition, page 156, which shows 39 for the average window not weather-stripped. The figure 100 is taken from the same table which shows 111 for a poorly fitted window in accordance with a note on page 157 of the same Guide which says for a well-fitted door, the leakage values for a poorly fitted double hung window may be used.

We realize, of course, that the usual procedure is to take the infiltration on the side which has the most crackage but not less than one-half the total for the room. However, usual practice takes all the infiltration in each room and we have followed this procedure.

We hope this satisfactorily explains what you want to know and answers your question.

Estimating Ductwork

American Artisan:

Please refer us to the best book on estimating sheet metal duct work for heating, ventilating, air conditioning.

J. L., Tenn.

Reply:

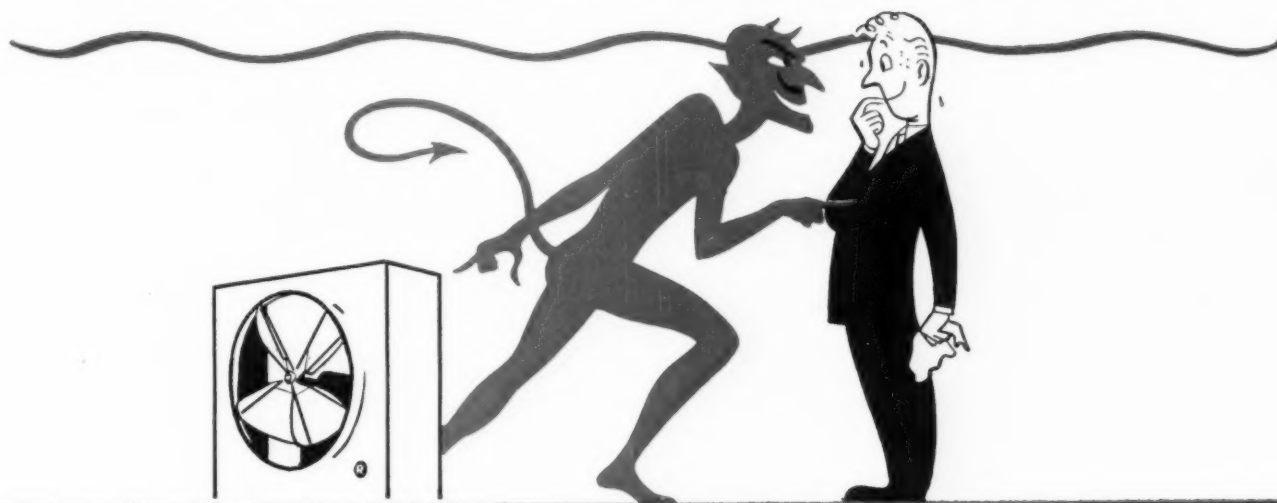
We are inclosing with this letter a booklet published by us some time ago in which the time required to fabricate certain standard sections of duct work are itemized in tabular form. By applying your wage rate against these times and by adding your overhead and profit, you can arrive at a cost per item unit.

These times were established in a shop well equipped with machinery and employing better than average mechanics who were accustomed to making up duct work day after day. Accordingly, if your labor is not as efficient, you may find it necessary to increase the time shown. You can easily determine this, we believe, by making a time study of certain standard items fabricated in your shop and then applying this increased or decreased percentage against the time shown in the tables.

A revised edition is in process and we hope to have the revision printed by the end of this year.

American Artisan.

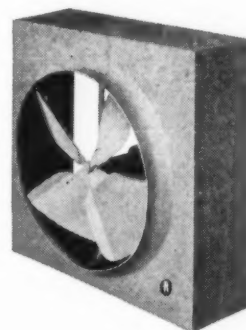
HOT WEATHER does your selling job... when you carry RHEEM cooling products



Hot weather's the salesman that brings profits rolling into your store when you carry the Rheem line of cooling products. For Rheem has a cooling unit to bring comfort in any summer climate.

IN HUMID REGIONS...

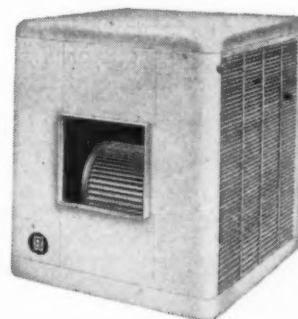
the RHEEM ATTIC FAN clears the accumulation of stale air from a home, office or restaurant. It sweeps out the stale air and replaces it with cool, fresh air. It's scientifically designed, easy to install, economical to operate. Here's a real sales booster that hot weather sells for you.



IN ARID REGIONS...

the RHEEM EVAPORATIVE COOLER brings a cool, humidified "inside climate" to any home or office, no matter how hot and dry it gets outside. It draws the hot, outside air through moistened filters, cooling and humidifying it. Then force circulates it through the whole space. Here's summertime comfort that means quick sales and big profits for you.

So let summer be your star salesman this year. He'll do the work for you . . . you collect the profits. Call your plumbing and heating jobber right away and get this Rheem line of cooling products into your store. Then watch your profits come rolling in. Call him . . . TODAY. And for full information, write Rheem, 570 Lexington Avenue, New York 22, N. Y.



RHEEM...making houses into homes

**NOW IS THE TIME
TO ORDER...**

Palmaire HEATERS

**FOR GREATER FALL
AND WINTER SALES**

**PALMAIRE
SUSPENDED
UNIT
HEATER**
An Outstand-
ing Product

Write for
Descriptive
Literature

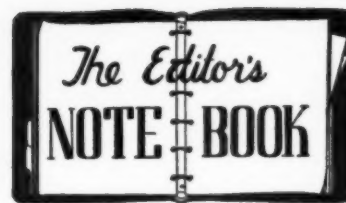


When you stock Palmaire . . . profits skyrocket . . . selling costs go down! Palmaire Suspended Unit Heaters are 'way ahead in construction and performance — the result of 38 years successful manufacturing and selling experience. Palmaire heaters have the features customers demand! They're made to sell . . . and stay sold. Write today!

JAM PACKED WITH POWERFUL SALES-PULLING FEATURES!

- Fully automatic — set it, forget it
- Requires no valuable floor space — hangs from ceiling without duct work
- Delivers maximum heat FAST with whisper quietness
- A G A approved for L P G, manufactured or natural gas (100,000 and 190,000 BTU models)
- Perfect for store or factory
- Rugged construction—built for long life

Palmer
MFG. CORP.
Phoenix, Arizona



Bookkeeping System

American Artisan:

A company, just starting in the heating and ventilating contracting business, has need for a simplified method of accounting and bookkeeping. We believe you have published information in AA describing such a system—if so please send it to us.

H. H., Calif.

Reply:

The Sheet Metal Contractors National Association's committee on bookkeeping recently announced arrangements for distribution of a simplified bookkeeping system especially designed for the small or medium sized shop. The system can be maintained within a single binder, if necessary, or can be expanded to take care of a business volume exceeding \$100,000. The system sells for \$30.00 complete with enough cards, sheets, etc., to operate the system for a year in the small shop.

Full details may be obtained from Clarence J. Meyer, Secretary, Sheet Metal Contractors Nat'l Ass'n., 567 Genesee St., Buffalo 4, N. Y.

American Artisan.

Training for a G.I.

American Artisan:

We have a young man working for us under the on-the-job training program, but we have not been able to develop an approved program of in-shop training. The VA officials suggest we give him a two-year sheet metal journeyman course. We would like to get any information you may have on such plans.

R. H., Oklahoma.

Reply:

We are sending you tear sheets of two articles published in AA describing on-the-job training plans developed by local groups of contractors and approved by their respective state Boards of Education.

Both these courses contemplate a four-year course. The four-year course meets with approval of most local unions. Some groups of non-union employers, we understand, have obtained approval for two-year courses which do not attempt to train an all-around journeyman, but train for certain specialties—such as oil burner service, automatic heating service, furnace installing, etc.

If you will show these articles to your VA officials, they may approve a similar plan, revised to meet your own fields of activity.

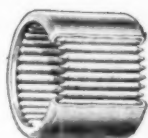
American Artisan.

SPECIFICATIONS! ... *not adjectives*

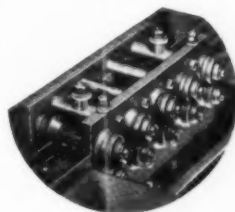
Lockformers continue to earn their reputation for being just about "wear-out-proof" simply because they're built to highest machine tool standards. For example:



Pittsburgh Rolls, shafts and gears cut from one piece of solid steel. No possibility of misalignment, no taper pins or keyways to cause trouble.

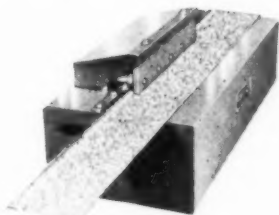


Roller Bearings throughout on ALL models. Minimum power requirements, minimum wear, friction and maintenance.



All steel forming head, hardened and ground shafts, case hardened steel forming rolls, machine cut gears, single and double V belt drives.

The Lockformer you buy today will continue to give you trouble-free service for many, many years to come!

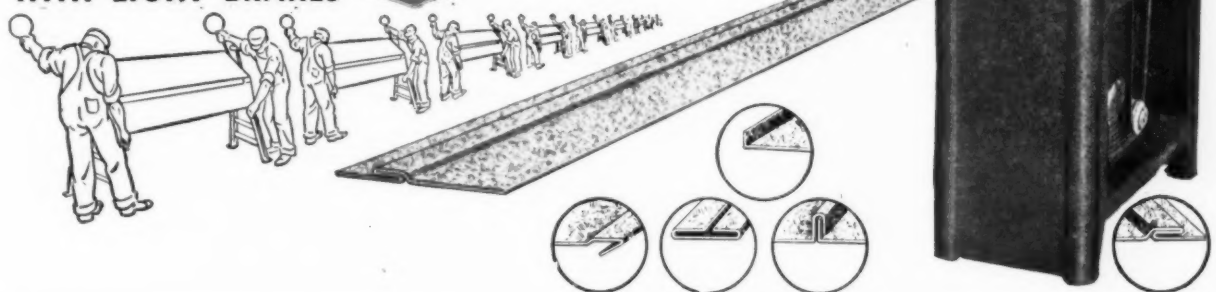


The Lockformer 24

**YOU CAN STILL BUY A GENUINE
LOCKFORMER *for less than* \$200**

(See illustration at left)

**ONE MAN WITH A LOCKFORMER CAN MAKE MORE
PITTSBURGH LOCKS THAN SIXTEEN MEN
WITH EIGHT BRAKES**



THE LOCKFORMER CO.

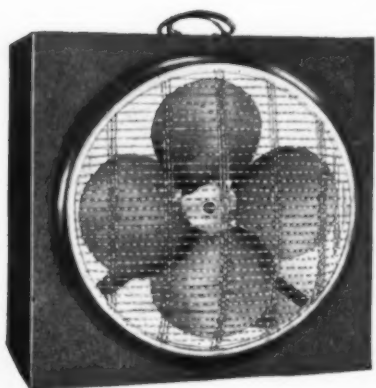
4615 ARTHINGTON STREET • CHICAGO 44, ILLINOIS

FOR ECONOMICAL SUMMER COMFORT



ALL-PURPOSE AIR CIRCULATOR

Type No. WF-14



This attractive REX AIRATE supplies air movement ranging from 1400 C.F.M. to 800 C.F.M. It is suitable for apartments, small homes, single rooms of large homes, small stores, offices and tourist courts. It economically solves the comfort problem of folks who want the benefit of air circulation and night air cooling.

The WF-14 is a compact, versatile and portable fan. With its convenient carrying handle it is easy to move about. To install the WF-14 fan, it is merely necessary to place it on a window ledge. The lower sash is raised above the fan housing and then lowered between the twin handles. In this position the fan can be used for either exhausting or blowing-in purposes, providing hot weather relief.

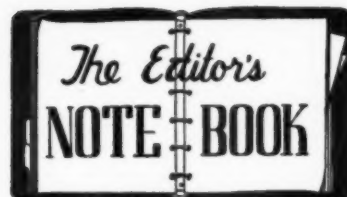
FEATURES

- MOTOR:** 1/25 H.P. Redmond motor. Will not interfere with radio; quiet and economical to operate.
- BLADES:** Four overlapping, made from aluminum, special REX design.
- CABINET:** Streamlined aluminum cabinet with walnut finish. Dimensions; 19 $\frac{7}{8}$ " high; 18 $\frac{7}{8}$ " wide; 8 $\frac{3}{8}$ " deep.
- SWITCH:** Equipped with a 3-speed switch.
- CAPACITY:** 1400 C.F.M. at high speed; 1150 C.F.M. at intermediate speed; 810 C.F.M. at low speed.

Approximate shipping weight 19 lbs. Furnished complete with a nine foot cord, ready to operate.



2310 Superior Ave. Cleveland 19, Ohio



Dust Collectors

American Artisan:

We need plans and specifications for dust collectors used in elevators, wood working industries and metal working industries. Can you tell us where to get such information?

J. M., Indiana.

Reply:

The requirements and specifications for waste material collection and separation are so varied that there has never been any one book published which covers all applications. American Artisan has published, however, a book "Correct Practice in Industrial Sheet Metal Work," which contains a wide variety of basic information on this subject, together with numerous descriptions of actual installations in many fields. This booklet sells for \$1.50 or, under certain conditions, is given free for a subscription (information on request).

American Artisan.

Washington Telegrams

The recent pressure wave on congressmen for and against the labor bill serves to focus attention on a practice which, in recent years, has come to be a major activity of practically all industries.

This activity is the "telegrams or letters to your congressmen."

It would seem that almost every group having identical interests—no matter how small that group may be, indulges in this new American pastime. The following has much of merit:

"More important than any single appropriation or any single activity in the Dept. of Agriculture—more than the Dep't even—are these: that the government of the United States and the American dollar keep their strength; that the mammoth debt be reduced; that taxes be lowered so that men have an incentive to produce. These things cannot be accomplished unless Federal expenses are sharply lowered. Expenses can't be lowered except by cutting appropriations and cutting them hard. Before any citizen sends a wire to protect some favored activity, let him ask himself whether a reduction of expenses and taxes will not serve him and his country better.

"American agriculture managed fairly well for a good many years while the funds of the department were only one-fifth as much, or even less. Crops still will be harvested and little pigs will still make pork, whether the department has two billion or two million to spend. Here is one place where farmers can take the lead to reduce federal expenses. If we must write or wire the congressmen, why not tell them to keep on whitening the figures down."

The Farm Journal, June, 1947.



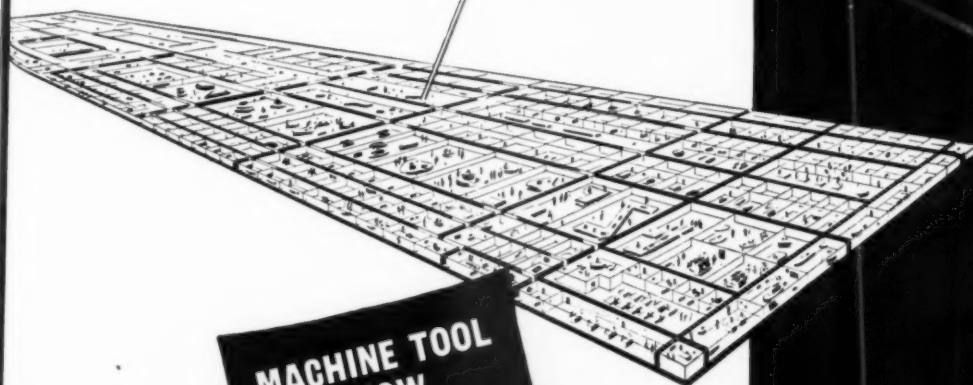
SEE THESE MACHINES *IN ACTION*

at the MACHINE TOOL SHOW, Sept. 17-26

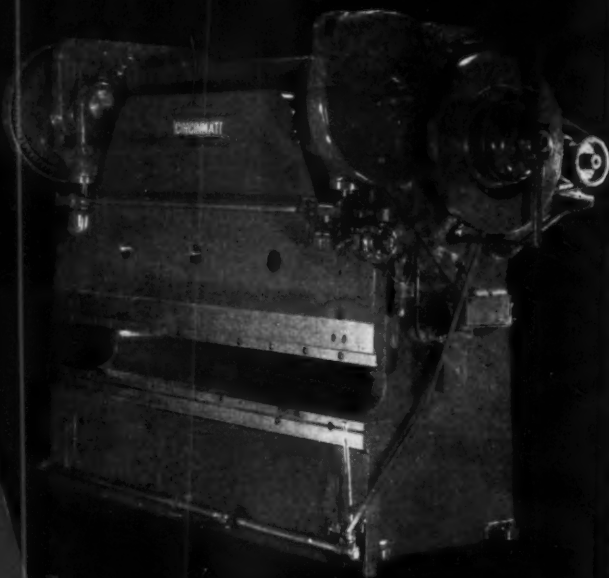
See the latest developments in the famous team of Cincinnati Shear and Cincinnati Press Brake—see them in action for 10 days—see them at Booth 417.

Write for illustrated book on the biggest Machine Tool Show of all time.

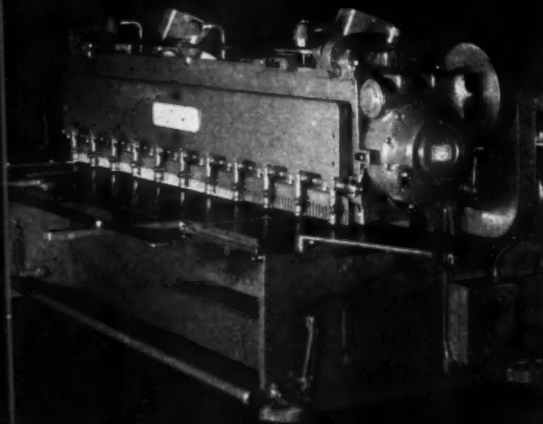
BOOTH 417



**MACHINE TOOL
SHOW**
Chicago Sept. 17-26
BOOTH 417



- Cincinnati Press Brakes are the modern machines for bending, forming, flanging and punching sheet metal and plate. Write for Catalog B-2 for information on these Brakes.



- Cincinnati Steel Shears give a new degree of accuracy in shearing sheet metal and plate. Write for Catalog S-4 for details on these shears.

THE CINCINNATI SHAPER CO.

CINCINNATI 25, OHIO U.S.A.
SHAPERS • SHEARS • BRAKES

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A Masterpiece in Room Temperature Control

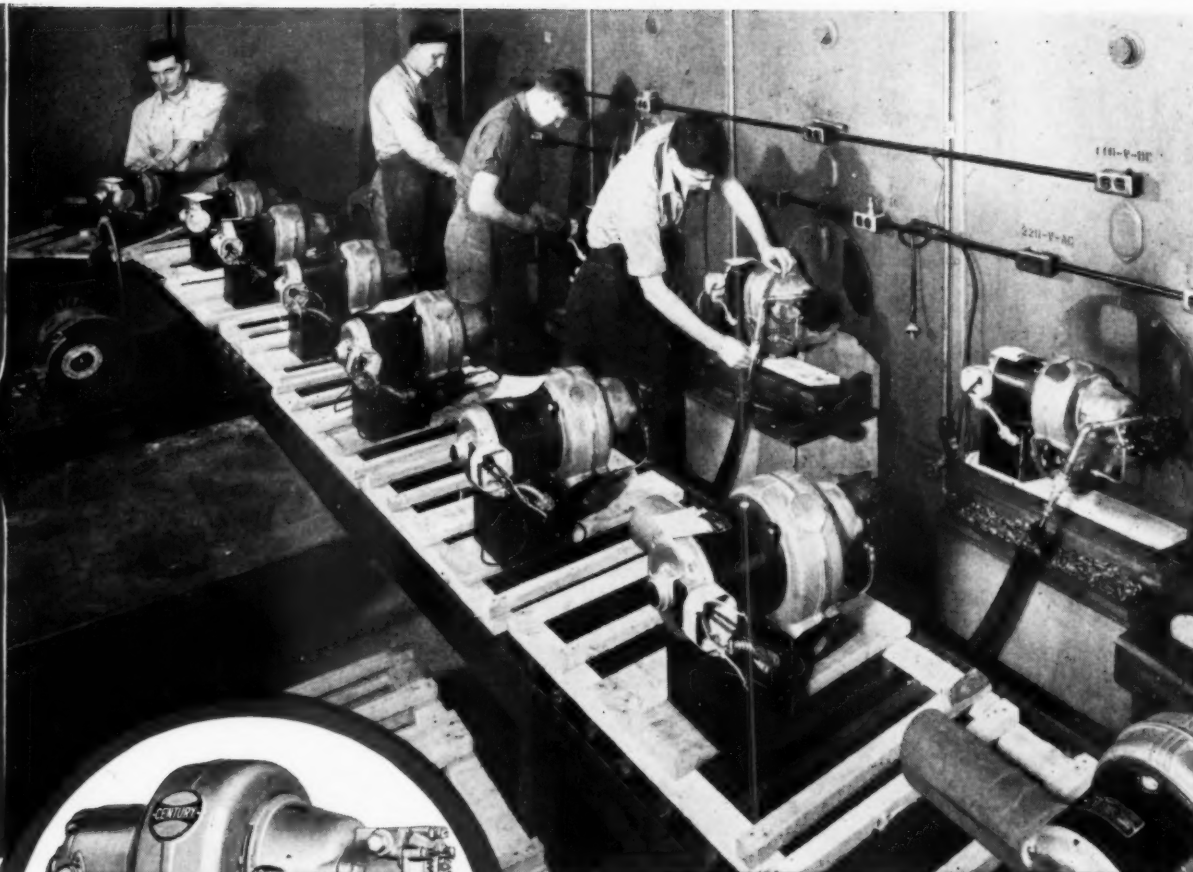
The Mercoid Sensatherm is unexcelled in its simple beauty. Its appealing lustrous aluminite natural metallic finish will last a lifetime. There is no lacquer coating to become dull, nor can it ever tarnish. It holds its newness in appearance indefinitely. To clean simply wipe off any accumulated dust with a cloth.

The performance of this instrument is unmatched for its even room temperature control. There are many factors in its design and construction contributing to its long life and positive operation. Particularly the hermetically sealed mercury switch. Summing up its appearance and performance, the Mercoid Sensatherm is truly the aristocrat among thermostats.

Complete Mercoid Catalog sent upon request.
THE MERCROID CORPORATION
 4201 BELMONT AVENUE • CHICAGO 41, ILLINOIS

★ **MERCROID CONTROLS** ★

FOR HEATING, AIR CONDITIONING, REFRIGERATION, AND VARIOUS INDUSTRIAL APPLICATIONS



CENTURY

Quality Control

Includes Fire Test for Every Burner

WHEN Century dealers tell about low maintenance cost on Century equipment, there is a reason and that reason is Century quality control.

Every vital Century part is checked and re-checked before assembly. Such parts as motors, transformers, nozzles, pumps, electrode assemblies, etc., are carefully inspected and checked with precision gauges.

Then, finally, the completed burner, and that means each burner on the assembly line, is installed in a furnace and fire tested under actual operating conditions.

That's why Century maintenance costs are low. Precision manufacture, plus 21 years of oil heating equipment know-how, make Century the profit line for dealers with an eye to the future.

CENTURY
Engineering Corporation
 CEDAR RAPIDS, IOWA

OIL BURNERS
 HUMIDIFIERS

BOILER-BURNER UNITS
 WATER HEATERS

WARM AIR FURNACES
 AIR CONDITIONING



You don't have to sell them HEALTH!

Every home owner knows the discomforts of dry hot air. Health authorities agree that moist air prevents colds and respiratory ailments, promotes health and vigor. Every home owner wants the kind of healthful comfort that is provided only by Thermo-Drip Heat Regulated Humidifiers.

Thermo-Drip Humidifiers moisten the air as it is heated—in direct proportion to temperature. Thermo-Drip Humidifiers positively regulate water feed and accurately control the amount of evaporation so that the minutely correct percentage of moisture is added to the air at all times. Thermo-Drip equipped furnaces give your customers the kind of health protection that doctors approve.

Thermo-Drip Humidifiers are manufactured from the finest materials and are designed and engineered to simplify your installation. Made in a variety of pan sizes for every type or make of warm air furnace. Write today for all the facts.

THERE'S A THERMO-DRIP HUMIDIFIER FOR EVERY TYPE OR MAKE OF WARM AIR FURNACE

THERMO-DRIP
HEAT REGULATED
HUMIDIFIERS

Made by
Automatic HUMIDIFIER CO.
CEDAR FALLS . . . IOWA

The *tireless twins* provide *effortless* heating economy



STOKER PRIMARY CONTROL
OUTSTANDING FEATURES

- Exclusive heavy duty twin contacts
- Removable timer assembly
- Hum-free, powerful relay
- Ample wiring space with knock outs on top for added convenience

Automatic heating is the only modern home equipment that is completely free from physical effort . . . eliminating costly fuel waste caused by the "hit or miss" regulation of hand firing.

Operated by Twin Contact Controls, as symbolized by the Tireless Twins; automatic heating prevents wasteful overheating, efficiently maintaining proper combustion and insuring safe, uniform heat. It provides your customers with savings that continue to add up . . . effortlessly reducing heating costs.

Identified with the trade mark names of leading manufacturers of automatic heating systems, Twin Contact Controls have proven themselves on thousands of automatic heating systems as qualified — and worthy of this distinction.

PERFEX CORPORATION, MILWAUKEE 7, WIS. • Perfex Controls Ltd., Toronto 1, On

PERFEX
TWIN CONTACT CONTROLS

MANUFACTURERS OF AUTOMATIC CONTROLS BEARING THE TRADE MARK NAME
OF LEADING PRODUCERS OF AUTOMATIC HEATING SYSTEMS AND APPLIANCE

EFFORTLESS AUTOMATIC HEAT . . . DOES THE JOB COMPLETELY

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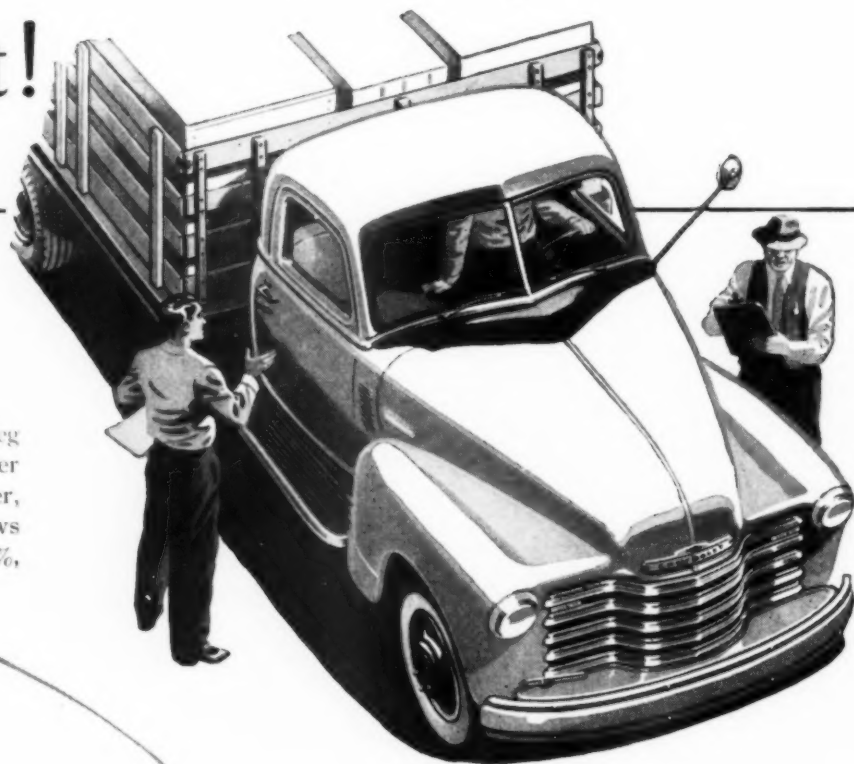
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Never before has there been a *new* line of trucks with so many features to talk about!

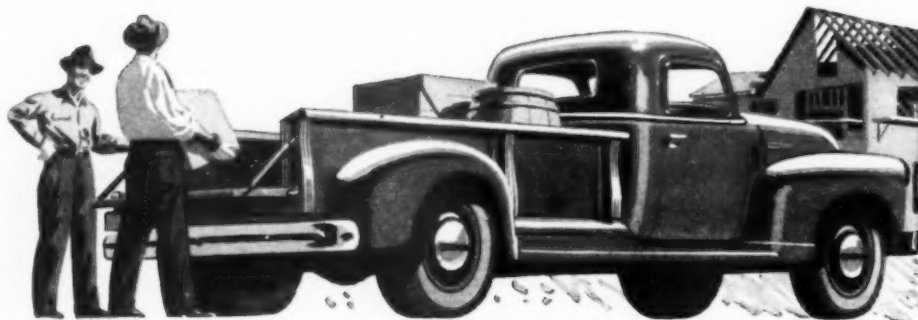
NEW FOUR-POINT DRIVER COMFORT. 1. The new cab that "breathes"—a stream of fresh air is drawn in from the outside—heated in cold weather—and used air is forced out.* 2. Driver's compartment is wider and deeper—more leg room. 3. New, fully adjustable, bigger and more comfortable seats. 4. Wider, deeper windshield and larger windows increase visibility from the cab by 22%, for safer, easier operation.

*Fresh-air heating and ventilating system optional at extra cost.



Chevrolet's revolutionary **FLEXI-MOUNTED CAB** is rubber-cushioned against road shocks, torsion and vibration; designed for longer cab life—one of many unique features in today's newest **ADVANCE-DESIGN** trucks. They're new from roof to road, from headlight to tail light, with performance that will give you better and more profitable results on any delivery or hauling job.

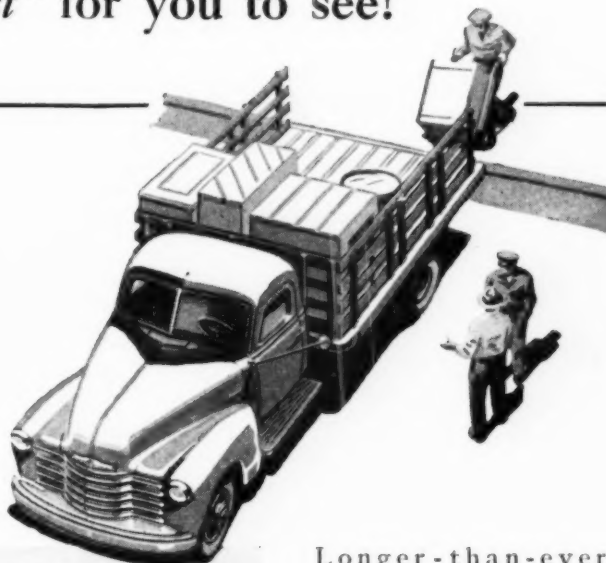
World's most economical for their size, Chevrolet's **VALVE-IN-HEAD TRUCK ENGINES** give extra power for extra profits. . . . You'll find **INCREASED LOAD SPACE** in panels and pick-ups to carry the larger loads and shorten the longer jobs—plus more efficient loading in stake and high rack bodies!



Drivers will find new comfort and new safety in the cab that "*breathes*"—"inhales" fresh air and "*exhales*" used air—that keeps glass clear and free from fogging... plus a host of other new features that make these trucks a "*must*" for you to see!



Chevrolet's stronger, sturdier **FRAMES** with new super-cargo capacity are designed to carry *greater* loads *greater* distances for a *longer* time. . . . Chevrolet's famous **FULL-FLOATING HYPOID REAR AXLES** are geared for your load on any road.

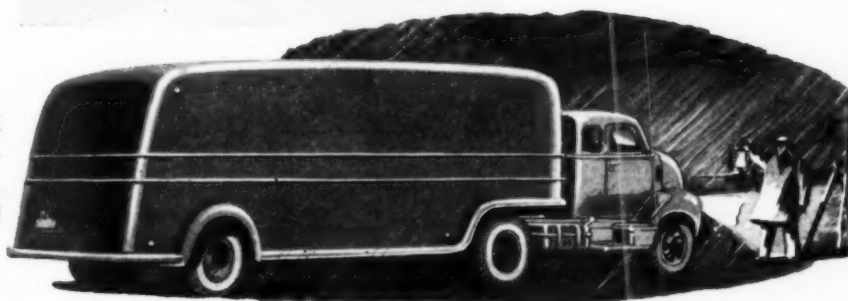


SEE YOUR CHEVROLET DEALER

He can supply Chevrolet trucks, standard or with special equipment, to meet your hauling needs.

Longer-than-ever **WHEELBASES** for more room in the cab... better load distribution!

Chevrolet's **HYDRAULIC TRUCK BRAKES** are quick, safe and dependable! Here is exclusive special linkage, designed to produce brakes at their best!



NEW ADVANCE-DESIGN

CHEVROLET TRUCKS

FOR TRANSPORTATION UNLIMITED

CHEVROLET MOTOR DIVISION, General Motors Corporation, DETROIT 2, MICHIGAN



PICK-UPS



PANELS



STAKES



CAB-OVER-ENGINE



TRACTOR-TRUCKS & CHASSIS FOR SPECIAL EQUIPMENT





From the cradle to

**HERMAN NELSON PRODUCTS
SERVE MILLIONS IN AMERICA**

MUSCATINE HIGH SCHOOL, MUSCATINE, IOWA

Architect: Keffer & Jones — Des Moines, Iowa

Engineer: B. E. Landes — Des Moines, Iowa

Heating Contractor: Sanitary Plumbing & Heating Co. — Muscatine, Iowa

IN grade schools, high schools, colleges and universities all over the country, comfortable and healthy air conditions are maintained by Herman Nelson Heating and Ventilating Products.

Because the average man spends about 80 per cent of his entire lifetime indoors, it is important that all buildings in which he goes to school, works and plays be properly heated and ventilated.

For over 40 years, The Herman Nelson Corporation has been building quality heating and ventilating equipment for public, industrial and commercial buildings of all types. Leading Architects, Engineers and Contractors, as well as Owners, know that the use of Herman Nelson Products will assure maintenance of desired air conditions.



THE HERMAN NELSON CORPORATION

Since 1906 Manufacturers of Quality Heating and Ventilating Products

MOLINE, ILLINOIS

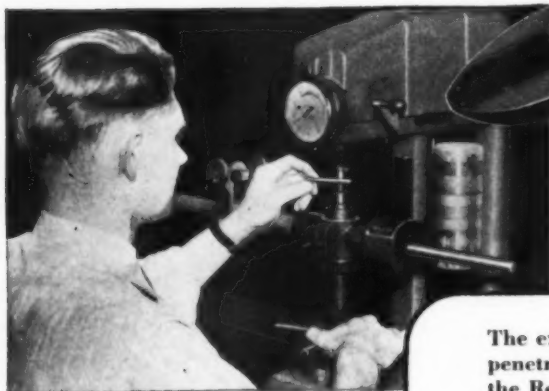


1200 magnifications reveal the structure of annealed forgings. Under the microscope, the laboratory technician can determine if the sample meets specifications.

CRESCENT* QUALITY *begins in the lab...*

At Crescent, "Quality" is more than just a word... it is an inseparable part of the materials, production control and workmanship which goes into every Crescent tool. Each individual heat of tool steel follows an exhaustive testing routine. A sample is Macro-etched to expose any cracks or other defects. Samples are also subjected to a Jominy hardenability test, a process of heating, then quenching the exposed tip of the test piece. Depth of the hardness penetration is then checked by the Rockwell hardness test.

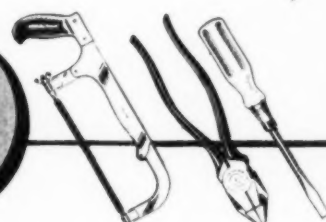
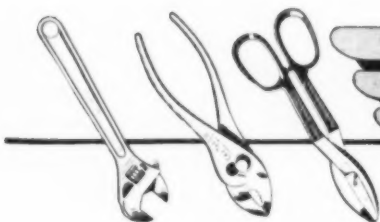
Only steel which meets or surpasses Crescent's rigid laboratory standards is released for production—your assurance of durability and performance in Crescent Tools.



The extent to which hardness penetrates is determined by the Rockwell test. In this procedure, a diamond test-point is

driven with equal, measured force into the sample at intervals. Readings at these points determine degree of hardness.

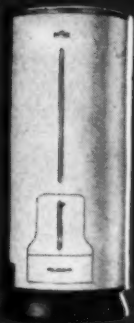
***CRESCENT TOOLS**
Give Wings to Work



* "CRESCENT" is our trade mark registered in the United States and foreign countries for wrenches and other tools. "Crescent" tools are made only by Crescent Tool Company of Jamestown, N. Y., and are sold by leading distributors everywhere.

ALL FOR ONE....

ONE FOR ALL!



C&L Hoffman water heaters. City Gas, Bottle Gas, Oil Fired, Electric, Multi-Coil.

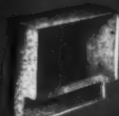
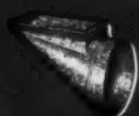


No. 22A



No. 22A

C&L heat tools . . . favorites for nearly 60 years.



C&L Lannock prefabricated duct and fittings for forced air heating and air conditioning systems; galvanized furnace pipe and fittings for gravity warm air heating systems.

THAT'S THE SPIRIT of C&L's factory-to-jobber-to-you distribution plan. By shipping only to your jobber, we are able to keep him fully supplied with all C&L products. By maintaining a complete C&L stock, your jobber is in a position to serve you at all times. And, by ordering from your jobber, you save warehousing expense, costly on-the-job delays and valuable floor space. In addition, you get the help of a fellow businessman who understands your problems.

Through efficient operation, jobbers have an important place in the system of distribution. C&L's experience of the past 60 years has established our factory-to-jobber-to-you plan for the future. Always specify C&L from your jobber . . . you can depend on him. Write for literature and the name of the jobber nearest you.

CLAYTON & LAMBERT MFG. CO. LOUISVILLE 10, KENTUCKY

Action When Needed!

Sampsel Limit Controls act automatically to prevent dangerous overheating that wastes fuel and injures heating plants. Easily installed on 2 or 3 wire high or low voltage systems as either regular or reverse acting controls. For all heating plants, new or replacement. Write for details.

HOT WATER LIMIT CONTROLS

Immersion-type, Back-angle (WL506). Horizontal mounting. Maintains water temperature in range of 120° - 220° F. Differential is easily adjustable.

Immersion-type, Straight-stem (WL505). Designed for vertical mounting. Adjustable differential of 10° - 20° F. Operating range of 120° - 210° F.

Strap-on type (WL507). Easily installed strap-on type clamps to hot water pipe. Variable operating range of 120° - 220° F. but differential is fixed.

STEAM LIMIT CONTROL

Pressure-Type (SL504). For low pressure systems. Operates in range 1 to 12 lbs. Vertical mounting. Maintains pressure differential of $\frac{3}{4}$ to 5 lbs.

WARM AIR LIMIT CONTROLS

Standard Limit (S48). Controls fan or operates as limit. Variable operating range of 50° - 540°. Simply adjusted differential range of 10° - 90° F.

Combination Fan-Limit Control (AF500). Automatically limits and regulates heat, controls fan. Adjustable independently. For all furnaces with blower.

There is a complete line of precision-built Sampsel automatic controls. Write for catalog.

Sampsel Time Control, Inc., Spring Valley, Illinois
Canadian Sales Distributor: Pease Foundry Co., Ltd., Toronto 1



MONCRIEF *First Again*

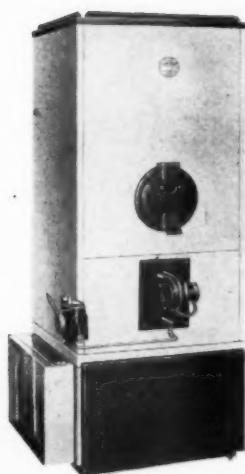


IN *"Years Ahead"* ENGINEERING AND CONSTRUCTION FEATURES!

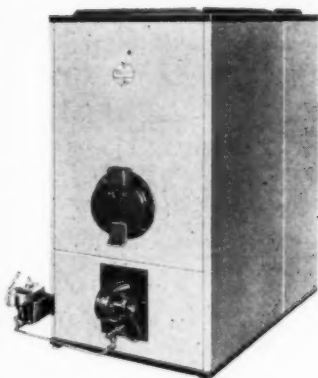
Easy Installation
Easy Servicing



↑ Series VW
Oil Fired, Steel
Gravity Unit



Series VU
Oil Fired, Steel Utility
Air Conditioning Unit ↑



↑ Series VL
Oil Fired, Steel
Air Conditioning Unit



Another Moncrief "Years Ahead" feature is the amazingly simple operation of removing the complete burner assembly without dismantling heating element or cabinet—a remarkable engineering achievement.

Moncrief's new line of vaporizing pot type units have tight-fitting cabinet floors that do away with basement platforms and grouting—the new method of automatic, submerged arc welding, that takes out the guess work—the heat absorbing radiation shield that does away with noisy inner liners—long-lived, stainless steel flame deflector—the burner with smokeless combustion.

These "stand-out" features make Moncrief a must on any heating job.

MONCRIEF VAPORIZING POT TYPE UNITS HAVE BEEN APPROVED BY UNDERWRITERS' LABORATORIES

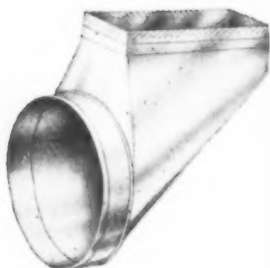
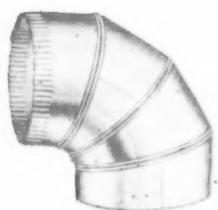
THE HENRY FURNACE COMPANY • Medina, Ohio

HEATING AND AIR CONDITIONING UNITS

MONCRIEF
SINCE 1895

FURNACE PIPE AND FITTINGS

Showing just a few
Char-Gale fittings



* **CHAR-GALE** PIONEERS AND PERFECTORS OF
ITS USE, TELLS WHY...

ALUMINUM Makes the **BEST** Fittings

Feather Light



The easiest handling fittings ever made! Cut strain and time on installations—cut transportation time and cost—cut handling time on the job.

Stronger - Longer Lasting



Rustproof clear through! Installations are stronger with aluminum—last years longer.

Better Looking

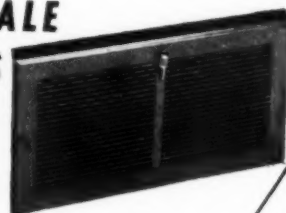


More customer satisfaction! The smooth, bright beauty of these fittings does not discolor with heat or time. Needs no painting or covering—just naturally beautiful.

And It Costs No More!

*CHAR-GALE REGISTERS

Sidewall, floor or
baseboard, air condi-
tioning or gravity,
there are Char-Gale
registers to fit your
needs.



PREFABRICATED
DUCTS AND FITTINGS
FOR WARM AIR
HEATING

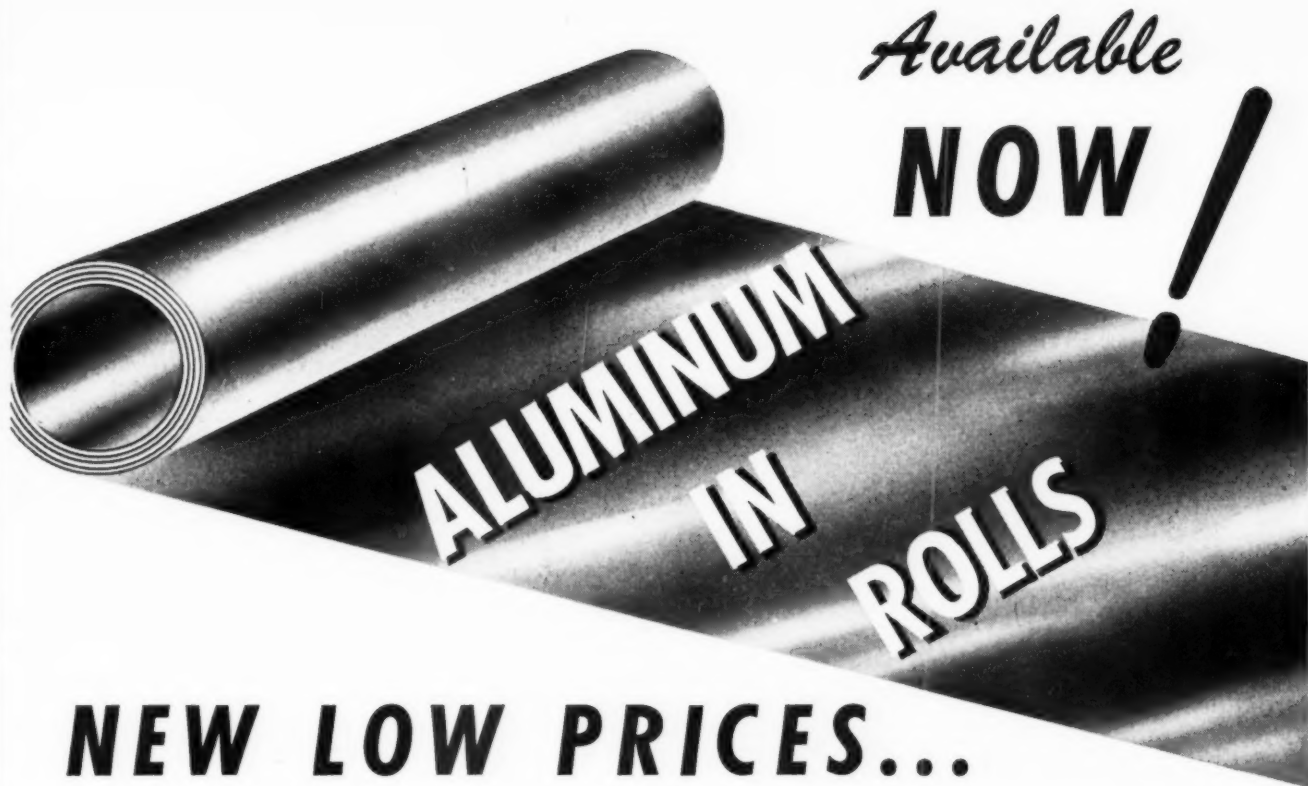
CHAR-GALE

MINNEAPOLIS, MINN.

CHAR-GALE MANUFACTURING COMPANY

OMAHA, NEBR.

"NO HEATING PLANT IS BETTER THAN ITS INSTALLATION—NO INSTALLATION CAN BE BETTER THAN ONE OF CHAR-GALE FITTINGS"



NEW LOW PRICES...

Aluminum saves time on the job and in transit. Each pound goes as far as three pounds of heavier sheet metal. Aluminum is hard enough to be durable, soft enough to be worked on any type of sheet metal working equipment. Millions of pounds of aluminum have

been used in the last six months for joist linings, ducts and fittings.

Today we can give you immediate shipment on Char-Gale Aluminum rolls!

We suggest 33" width—it can be used for fittings as well as for joist lining.

PRICE LIST *effective July 10, 1947*

ALUMINUM ROLLS *

25 ½ Hard—¾ Hard Thickness—.025 (approximately the same as 24 gauge steel)

Pounds	Full rolls 500 lbs.	100-lb. rolls
30,000 and over . . .	\$0.246	\$0.256
20,000 to 29,999 . . .	.248	.258
10,000 to 19,999 . . .	.251	.261
5,000 to 9,999 . . .	.271	.281

Pounds	Full rolls 500 lbs.	100-lb. rolls
2,000 to 4,999 . . .	\$0.276	\$0.286
1,000 to 1,999 . . .	.281	.291
500 to 999 . . .	.306	.316
100 . . . . .		.336

Net Ten Days

Prices are per pound
for quantities shown

Prices subject to change without notice.

* Also available in sheets—Write for Prices

Write or Wire Your Orders to

IMMEDIATE DELIVERY

PREFABRICATED
DUCTS AND FITTINGS
FOR WARM AIR
HEATING

CHAR-GALE

IMMEDIATE DELIVERY

MINNEAPOLIS

CHAR-GALE MFG. CO.

OMAHA

"DETROIT" *Controls* for Vaporizing Oil Furnaces

Automatic—Thermostat Controlled



Simple
Reliable
Durable

CRC-239 FF
With 2-Speed Draft Fan Control

CRC-239 FH
With Draft Fan Control, High Fire Only

CRC-239 FN
Without Draft Fan Control

The "Detroit" line of controls for vaporizing type oil furnaces is complete, thoroughly tested by years of service—simple, reliable and durable.

Typical of the operation of these valves is the CRC-239 FF. When the room thermostat calls for heat, the valve opens to a hesitation point, at which a predetermined amount of fuel is fed to the burner for approximately one minute. At the end of this hesitation period the metering stem snaps to the full "on" position and the motor speed is increased simultaneously to provide full draft for high fire operation. When the room thermostat is satisfied, the heat motor returns the metering stem to the hesitation point within a few seconds. The fan continues to run at high speed for approximately two minutes to clear up the fire. At the end of this purge period the oil

flow is cut down to pilot and fan speed is reduced to provide proper draft for the pilot.

CRC-239 FH operates in the same way, except that the induced draft fan is cut off at low fire, for which natural draft is used.

CRC-239 FN is for use with burners not having induced draft, or for those burners having continuous forced draft at both high and low fire.

All models have independent adjustments for high and low fire. All are based upon the sturdy, reliable CRC-239 Float Valve mechanism. They're easy to clean, and rarely need any other servicing.

Use the "Detroit" No. 411 Thermostat with "Detroit" Furnace Valves, for the most satisfactory operation.

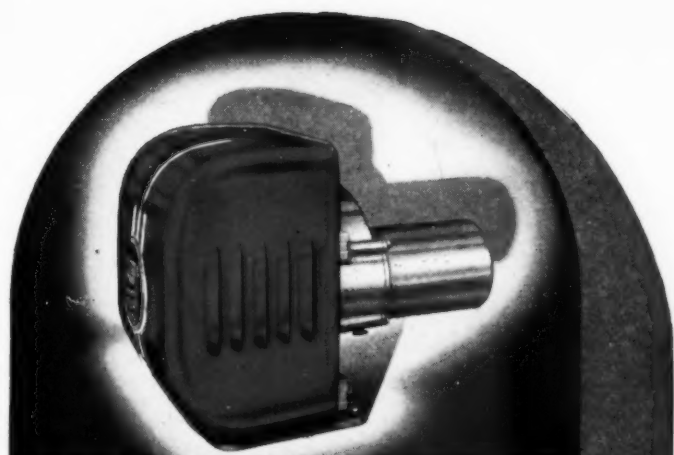
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DETROIT LUBRICATOR COMPANY General Offices: 5900 TRUMBULL AVENUE
DETROIT 8, MICHIGAN



Division of **AMERICAN RADIATOR & Standard Sanitary CORPORATION**
Canadian Representatives—RAILWAY AND ENGINEERING SPECIALTIES LIMITED, MONTREAL, TORONTO, WINNIPEG

"Detroit" Heating and Refrigeration Controls • Engine Safety Controls • Safety Float Valves and Oil Burner Accessories • "Detroit" Expansion Valves and Refrigeration Accessories • Stationary and Locomotive Lubricators



A NEW KIND OF OIL BURNER.... WITH AN AMAZING PERFORMANCE

This entirely new type of oil burner . . . the first truly post-war oil burner . . . brings you the greatest advance since oil burners were first invented . . . gives you the cleanest, most convenient heat you've ever had . . . saves you money on heating costs. NEW . . . yet produced by one of the oldest, most respected firms in the oil heating field, with 25 years experience. WHAT IS IT? Not a conventional gun-type oil burner — not a rotary burner — but a new kind of oil burner . . . a new method of turning oil into pure heat. Combines a double charge of oxygen with oil . . . gives hottest oil flame ever developed. Get the full story . . . mail the coupon below.



THIS FLAME is a hollow cone of heat . . . clean and bright — made possible by the DUAL-OXENIZER (Patents Pending) . . . a result of our experience making compact aircraft heaters for U. S. Air Forces. Why should you pass up the fuel savings this new burner can bring you? Mail the coupon . . . today.

PATENTS
PENDING

Master Kraft

OIL
HEAT

MADE BY A PIONEER
OIL BURNER MANUFACTURER
HARVEY-WHIPPLE, INC.

Harvey-Whipple, Inc.
Dept. N-3, Springfield, Mass.
FREE — send me literature and name of
nearest Master Kraft Dealer.

Est. 1922

Springfield,
Mass.

Name.....
Street.....
City..... State.....

Master Kraft OIL HEAT

YOUR PUBLIC IS WAITING FOR THIS . . .

and will read about it in these
national Publications



This advertisement will be seen by twenty million home owners and home builders at the peak of oil burner demand.

This new kind of oil burner will give you something new to offer your prospects—something revolutionary in design—bristling with sales features and built by a manufacturer who pioneered in the oil burner industry.

What is it? Not a conventional gun-type oil burner —not a rotary burner—but a new kind of oil burner . . . a new method of turning oil into pure heat. This burner has everything you need to close sales quickly. And it will save you time and money on your service calls . . . make more profit for you.

Write today for free booklet . . . shows you why the Dual-Oxenizer is the greatest advance in oil burner design since oil burners were first invented—illustrates the easy, quick-change service features.

MAIL THE COUPON BELOW . . . TODAY

HARVEY-WHIPPLE

Incorporated

Springfield

Massachusetts

HARVEY-WHIPPLE, Inc.,
Dept. AA-7,
Springfield, Mass.
Gentlemen:
Please send me details about a MASTER KRAFT
Franchise.
Name.....
Street..... State.....
City.....

summer is a **HOT** season for **FILTERS**, too!

ESPECIALLY THIS SUMMER!

HERE'S WHY!

A late spring and summer such as we have had this year, provide a real opportunity to DUST-STOP* Dealers. They offer not *one*, but *two* opportunities for easy sales and profits: (1) with those who have finally shut down their heating plants and will be glad to have you replace their dirt-clogged furnace filters; (2) with another large group who are starting up their summer cooling systems (or using their furnace blower and duct system for evening ventilation). These folks, too, need new filters. Now add to this, the extra sales and profits you make from servicing these units and you can see why summer is a "hot" season for filter sales. Especially *this* summer! Ask your DUST-STOP Distributor how *you* can get your share of this business!



OWENS • CORNING

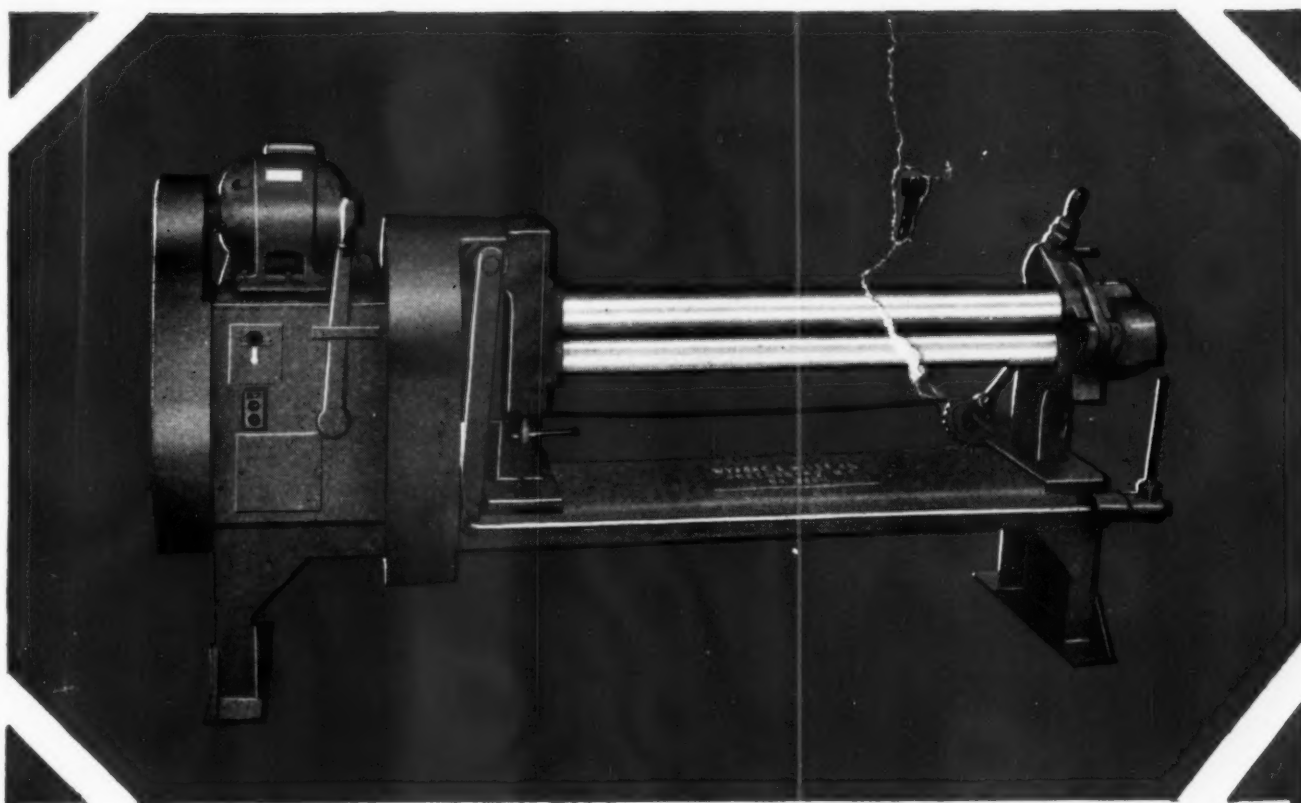
FIBERGLAS CORPORATION

Nicholas Building

Toledo 1, Ohio



"Your partner whose Actions speak louder than words"



POWER BENDING ROLL FOR HIGH PRODUCTION

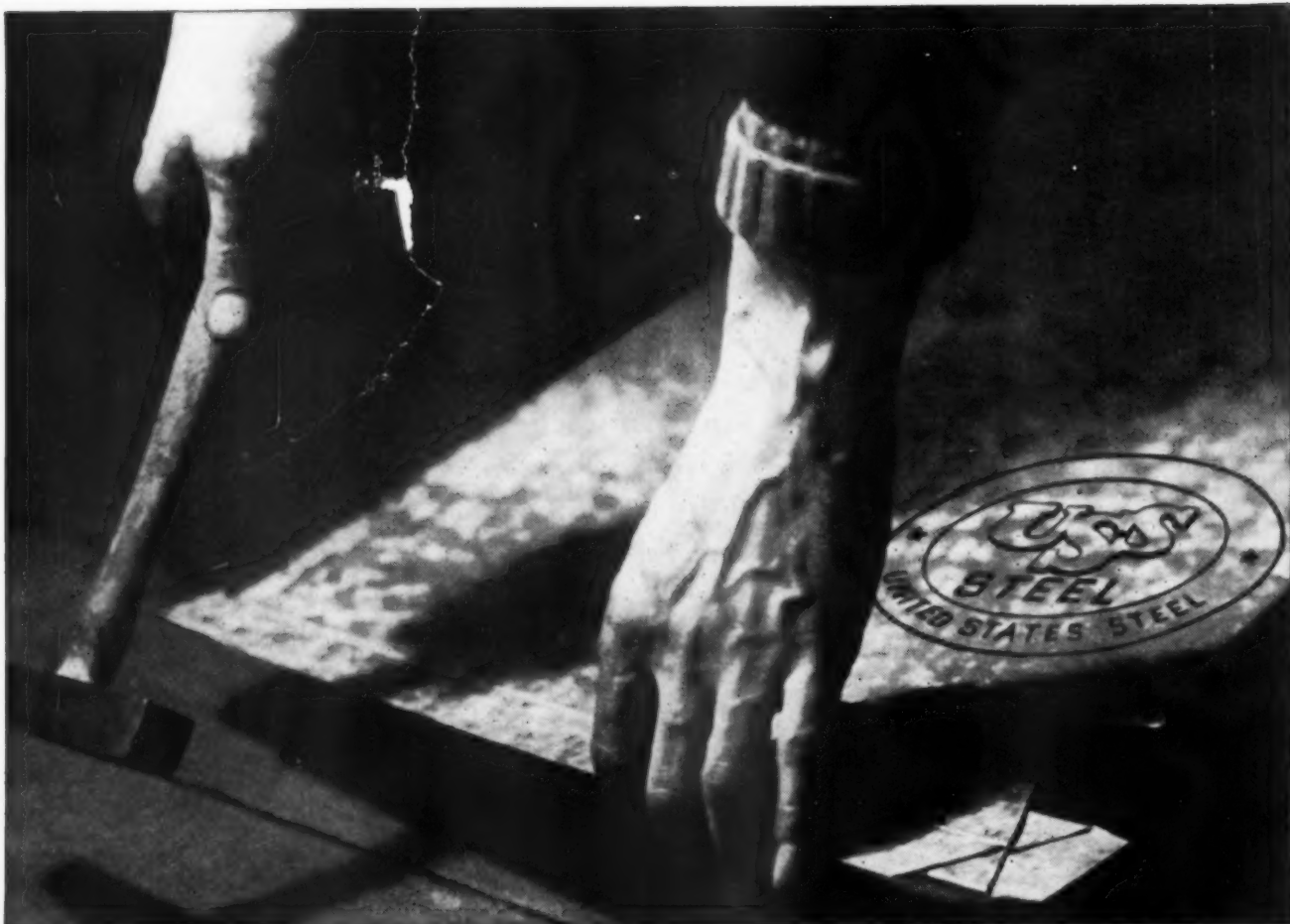
A MASSIVE and highly efficient Power Bending Roll for forming cylindrical shapes, capacity 5/32" mild steel. Positive locking mechanism . . . convenient and quick-acting device for lifting upper roll. Longitudinal grooves for forming small diameters in a single pass . . . gears are in proper mesh for all settings. 5 HP motor with easily accessible reversing and magnetic switches. Wysong & Miles 100% jig and fixture construction is your guarantee of uniformly superior machines.

Made in three sizes . . . No. 872-PR, 72" working length, No. 860-PR, 60" working length and No. 848-PR, 48" working length. Machines equipped with 5" diameter rolls with all rolls driven. Write for detailed information.

WYSONG and MILES Co

GREENSBORO, NORTH CAROLINA

DESIGNERS AND BUILDERS OF MACHINE TOOLS FOR OVER 45 YEARS



The Brand most in demand... but —

POPULARITY has its penalty. Despite the fact that our mills are working day and night trying to keep up with the tremendous demand for U·S·S Steel Sheets, we are still unable to supply *all* who want them with *all* they need.

This has created a situation which isn't good for us . . . or for you. For you either turn down a lot of business because you haven't got the fine quality sheets you need for the jobs. Or you turn to unbranded sheets of unknown quality . . . at the risk of your reputation for quality work.

WHAT'S THE ANSWER? Keep asking your jobber for U·S·S Steel Sheets. With shipments going out as fast as possible, he may now have what you need. For workability and wearability, U·S·S Sheets are second to none . . . and most of your customers feel that good steel sheets are well worth waiting for. Remember, too, that the widely-advertised U·S·S trade-mark which makes these fine sheets so easy to identify is now more than ever, your assurance of good workable steel at a fair, published price.



U·S·S STEEL SHEETS

CARNEGIE-ILLINOIS STEEL CORPORATION, Pittsburgh and Chicago

COLUMBIA STEEL COMPANY, San Francisco

TENNESSEE COAL, IRON & RAILROAD COMPANY, Birmingham

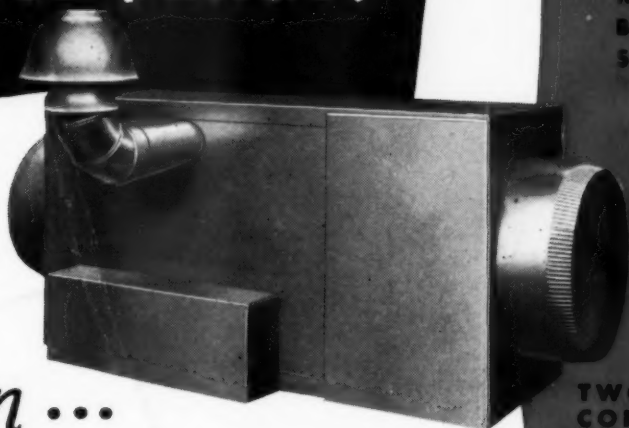
United States Steel Supply Company, Chicago, Warehouse Distributors

United States Steel Export Company, New York

7-904

UNITED STATES STEEL

**"it's a natural
sales builder"**



Norman ...

CENTRAL HEATING SYSTEM WITH 101 APPLICATIONS

New markets and new profits are yours with the new Norman 101. This compact, fully automatic central heating plant has 101 heating applications for small homes and commercial buildings in natural, mixed, manufactured and LP Gas areas. It is particularly efficient and economical for heating:

TOURIST CABINS	GARAGES	TRAILERS
SERVICE STATION	OFFICES	GREENHOUSES
REST ROOMS AND OFFICES	RANCH TYPE HOMES	FARM BUILDINGS
STORES	SMALL HOMES	RECREATION ROOMS
PORTABLE SCHOOLS	ROOMS OVER GARAGES	PORTABLE BUILDINGS
SUMMER COTTAGES	SMALL PLANT BUILDINGS	SPOT HEATING

LPG CENTRAL HEATING SYSTEM FOR TEMPERATE CLIMATES

The Norman Southerner out-dates the old type coal-fired or gas-fired circulating heater and conventional floor furnaces for temperate climates. It can be easily installed out of the way in the attic, suspended from joists under the floor, or placed in a closet.

The Norman 101 saves on costly duct work and can be vented to the existing chimney or with an outside stack. The new Norman folder, "It's A Natural Sales Builder", offers complete information. Send for your copy today.

DEALER AND DISTRIBUTOR TERRITORIES OPEN

Norman **PRODUCTS CO.**

1150 CHESAPEAKE AVE., COLUMBUS 12, OHIO

Manufacturers of Norman Gas Conversion Burners,
Norman Gas Furnaces, Norman Oil Conversion Burners.

THREE MODELS
MODEL FU 30
BTU Output 22,500.
Size: 13" x 16" x 29".
MODEL FU 55 or FA 55
BTU Output 41,250.
Size: 13" x 16" x 40".

**TWO BEST SELLERS IN
CONVERSION BURNERS**
NORMAN OIL BURNER — An improved hydroxylating type burner featuring an advanced principle of vaporizing oil faster and more completely to produce a cleaner, hotter gas flame made from oil. Quiet, continuous operating, low-wattage blower assures positive combustion on low or high fire. Quickly installed in most furnaces and boilers.

NORMAN GAS BURNER features the exclusive Norman improved principle of burning gas which has proven its heating efficiency and economy in thousands of installations. Permits greater flexibility, easier installations, speedier servicing. Handles natural, mixed, manufactured or LP gas.



E. A. Norman, Jr., President
D. D. Piper, Exec. Vice Pres. in Charge of Sales



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*"pretty
as a picture"*

the way you can lithograph, enamel and lacquer

Products made from Weirite Electrolytic Tin Plate have plenty of eye-appeal in the nation's counters. Its uniform, fine-texture surface is well suited to all kinds of colorful merchandising dress.

Recommended for dry-packed containers—for cannisters, closures and light cans... Weirite Electrolytic Tin Plate is the most economical form of rustproof metal you can use.

Other Weirton tin mill products are Weirite Hot-Dip Tin Plate for liquids and foodstuffs requiring high corrosion-resistance, and Weirite Tin Mill Black Plate.

WEIRITE

Electrolytic Tin Plate

WEIRTON STEEL COMPANY

WEIRTON, W. VA. Sales Offices in Principal Cities. Division of NATIONAL STEEL CORPORATION Executive Offices, Pittsburgh, Pa.





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*"pretty
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the way you can lithograph, enamel and lacquer

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WEIRITE

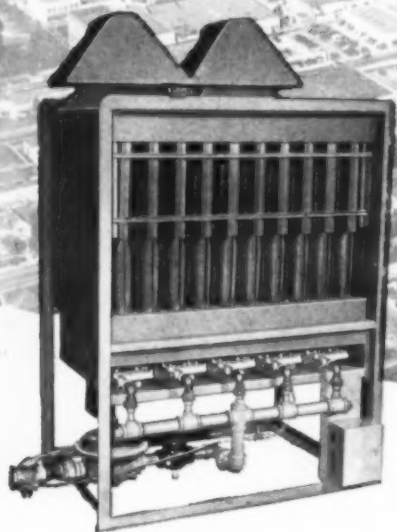
Electrolytic Tin Plate

WEIRTON STEEL COMPANY

WEIRTON, W. VA. Sales Offices in Principal Cities. Division of NATIONAL STEEL CORPORATION Executive Offices, Pittsburgh, Pa.



Watch the Word spread!



Duo Stage MODULATION

...as featured in the
Revolutionary New
Pacific DUCT FURNACE

The most exciting development in Automatic Gas Heating in years! That's the new Pacific Duct Furnace with the unique Duo Stage Modulation.

Ideal for so many types of larger buildings—schools, churches, theatres, residences, stores—the Duct Furnace is a highly efficient component of your heating, ventilating or air conditioning system, to which a still greater flexibility has been added.

By automatic selection of two stages of discharge air temperature, Duo Stage Modulation permits maintenance of constant room tempera-

ture without diminishing warm air circulation or fresh air ventilation.

This new conception of "heat blending" materially reduces stratification, temperature fluctuation and gas consumption. It also assures a wholly new standard of sustained comfort throughout the building being served.

Gas heating authorities everywhere make no bones about it. This new furnace is exciting news! It is the practical, immediate successor to conventional "hot blast" forced air furnaces.

Up and down every street in your town are customers who await the new Pacific Duct Furnace.

PATENT APPLIED FOR
© 1947

MORE EXCITING NEWS TO COME

Pacific is the company to watch... other "Front Page News" will soon be announced to the Gas Heating Industry.
34 YEARS IN GAS HEATING EXCLUSIVELY!



NACO MANUFACTURING CO.

PACIFIC HEATER DIVISION

P. O. BOX 310 • HUNTINGTON PARK, CALIFORNIA

TONCAN IRON

Combines Molybdenum with Extra Copper



It's a proved fact that long-lasting Toncan Iron offers the *highest rust-resistance of all ferrous material in its price class*. Why? Three reasons: (1) The highly refined open-hearth iron, which is its basic ingredient. (2) Extra copper content—actually, twice that of copper-bearing steel and iron. (3) The addition of molybdenum, which multiplies the effectiveness of the alloyed copper.

For nearly 40 years, Toncan Iron has provided low-cost, unfailing rust protection in thousands of different sheet metal installations. It repeatedly has proved itself to be uniformly ductile, easy to fabricate and weld by all methods. And it has demonstrated that it is unaffected by shearing, bending, punching, corrugating, riveting and other cold working.

Complete information on request. Write to:

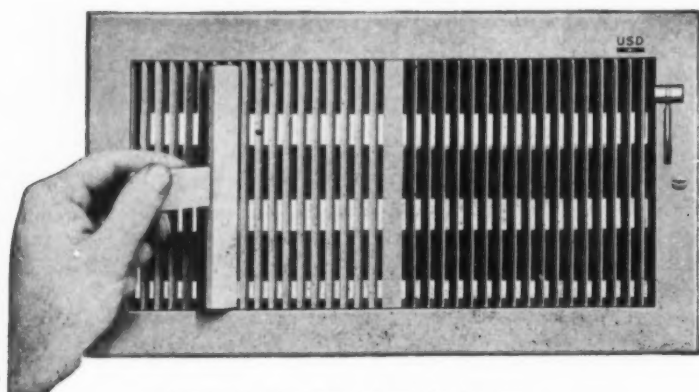
REPUBLIC STEEL CORPORATION
GENERAL OFFICES • CLEVELAND 1, OHIO
Export Department: Chrysler Building, New York 17, New York

Toncan Iron offers many business and profit-building advantages to you, the sheet metal contractor. Get the complete story by writing today for your copy of Republic's FREE Booklet No. 410—*How Toncan Iron Makes Money for Sheet Metal Contractors and Fabricators*.

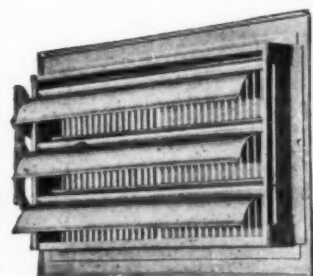


—for ducts, gutters, conductor pipes, roofing, siding, tanks, ventilators, skylights, hoods, and other sheet metal applications requiring rust-resistance

• A REGISTER THAT DESERVES ITS GOOD NAME •



No. 4432 Airo-Flex Adjustable Register

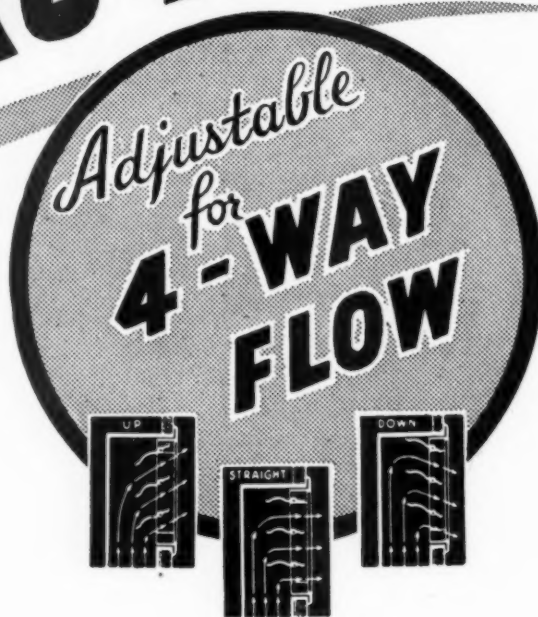


Back view of
Airo-Flex No.
4432 Register

Auer AIRO-FLEX



There is good reason for the popularity of this Auer Airo-Flex "4400" Series of air conditioning registers. This has long been one of our leading models, because it fulfils every requirement of efficient 4-way directional operation—without the fancy frills (or the fancy cost) sometimes associated with this type of register. It has horizontal multi-louvre deflecting blades to regulate up-and-down flow, with indicator on face showing blade position. Its vertical grille bars are easily adjusted to desired lateral angles, with turning tool. In eye appeal, perfection of finish, and careful craftsmanship, it rates with the best, and does credit to *any* job. Available for wall or baseboard use with intakes to match.



Though still not able to supply *all* demands for *every* Auer item, we are better prepared than at any time recently, to fill most of your register and grille needs. Auer makes a complete line of quality registers for all warm air and air conditioning purposes. Ask for Auer Register Book—or special Catalog on flat stamped metal grilles.

THE AUER REGISTER CO., 3608 PAYNE AVENUE, CLEVELAND 14, OHIO

Auer **REGISTERS**
& GRILLES for AIR CONDITIONING & GRAVITY

CONCO Means

DEALER PRESTIGE...!

Fine Quality . . . Dependability
 . . . Superior Performance . . . Modern
 . . . Outstanding Service . . . These make up
 the reputation of the CONCO dealer because
 they are the characteristics of the equipment he
 sells—CONCO heating equipment.

The CONCO dealer is assured years of steady
 prosperity because of the prestige he and his
 equipment enjoy in the community. Write today, to
 the nearest CONCO distributor.

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CENTRAL FUEL EQUIPMENT CO.
 Chicago 6, Illinois

CONDITIONED AIR, INC.
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EQUIPMENT DISTRIBUTORS
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IN CANADA—THE CANADIAN FAIRBANKS-MORSE CO., LTD., MONTREAL 3, CANADA

CONCO
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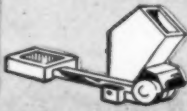
WATER
 HEATERS



GAS-FIRED WINTER
 AIR CONDITIONERS



OIL-FIRED WINTER
 AIR CONDITIONERS



INDUSTRIAL
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STEEL
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DOMESTIC
 HOPPER STOKERS



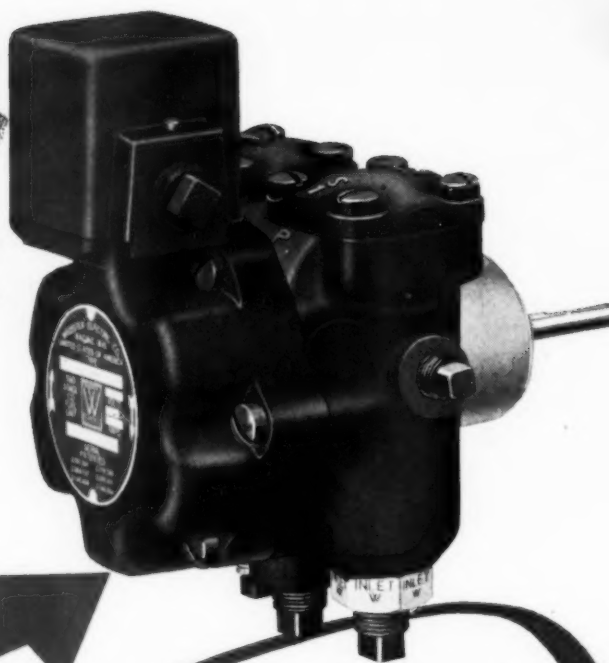
DOMESTIC BINFEED
 STOKERS



CONVERSION
 OIL BURNERS

CONCO ENGINEERING WORKS
 MENDOTA, ILLINOIS

The new
WEBSTER ELECTRIC
Instantaneous
Cut-off
FUEL UNIT



**HERE ARE THE
 MAIN FEATURES!**

Foresighted research and engineering behind this new Instantaneous Cut-Off Fuel Unit represents years of effort. Not content until the design was simple and sound, Webster Electric Engineers continued efforts until they could release this new item with pride. Here it is with features far superior to any on the market today. It has no sliding close fitting parts—no mechanical seals are involved—there is no need to disconnect any electrical circuits to service valve or strainer—emphasis has been placed upon simplicity. It works instantly—efficiently—and quietly. It has the ability to instantaneously cut the nozzle line pressure to zero.

You get absolute clean burning—start—running—and stop—no soot—cut off is instantaneous and complete—it prevents "puff-back" or "flutter" in the combustion area on shut-down.

The Webster Electric Instantaneous Cut-Off Unit is adaptable to present day equipment and modernization of equipment six to eight years old. Read the features shown here, then send your inquiry to Webster Electric for complete information and folder.

Easy to Install—Entirely standard with Webster Electric mounting and service characteristics. Parts are identical in seal—strainer and valve with well known Webster Electric standard fuel units. Electrical connections can be brought into the mechanism from either side of unit.

No Spilling of Oil—There is no spilling of oil when servicing strainer.

Added Safety Features—In conjunction with the electro magnetic valve, a standard duplex regulating valve operates normally and can operate independently of the electric action.

Simplicity of Design... No engaging or disengaging mechanism of close fitting parts that might stick.

No High Pressure... No high pressure sealing is required, magnetic valve operates in by-pass chamber.

For Either Single or Two Stage Unit... Furnished for either type.

Design... This new Webster Electric Instantaneous Cut-Off Valve is of the same high standard of perfection as all other Webster Electric products.

WRITE FOR FULL INFORMATION!

WEBSTER  **ELECTRIC**
 RACINE WISCONSIN

Established 1909

Export Dept. 13 E. 40th Street, New York (16), N. Y. Cable Address: "ARLAB" New York City

"WHERE QUALITY IS A RESPONSIBILITY AND FAIR DEALING AN OBLIGATION"

Protected Territory

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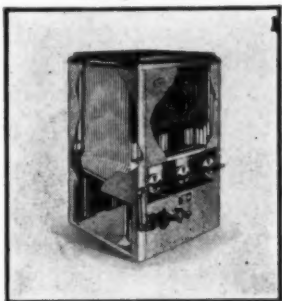
COMPLETE RYBOLT LINE



Rybolt Series 15
Cast Iron Coal Fired
Gravity Furnace



Rybolt Series RH 71
Steel Coal-Fired
Gravity Furnace



Rybolt Series RG 53
Cast Gas-Fired
Gravity Furnace



Rybolt Series RG 54
Cast Gas-Fired
Winter Air Conditioner



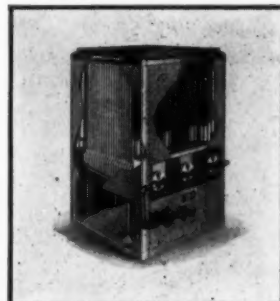
Rybolt Series 151
Cast Coal-Fired
Winter Air Conditioner



Rybolt Series RH 76
Steel Coal-Fired
Winter Air Conditioner



Rybolt Series RG 52
Steel Gas-Fired
Winter Air Conditioner



Rybolt Series RG 51
Steel Gas-Fired
Gravity Furnace



THE RYBOLT HEATER COMPANY

615 MILLER STREET



ASHLAND, OHIO

WHEN YOUR PROSPECT "KNOWS" OIL BURNERS...



***he can see for himself that among
fine oil burners, PETRO rates first!***

OFTEN YOU may have a prospect who understands mechanical equipment. From experience he knows how to appraise its significant features.

To him a Petro oil burner speaks for itself! He quickly detects the excellence of Petro design, the quality of Petro materials, as well as the skilled engineering and precision workmanship apparent in every part. He can see for himself that among fine oil burners, Petro rates *first*.

Petro oil burners are made in pressure-atomizing

domestic models and rotary cup industrial models for every need. They are distributed through established heating wholesalers. Let us refer you to the one nearest to you.

PETRO

REG. U. S. PAT. OFF.

MAKERS OF GOOD OIL BURNING EQUIPMENT
SINCE 1903

PETROLEUM HEAT AND POWER COMPANY • STAMFORD, CONNECTICUT

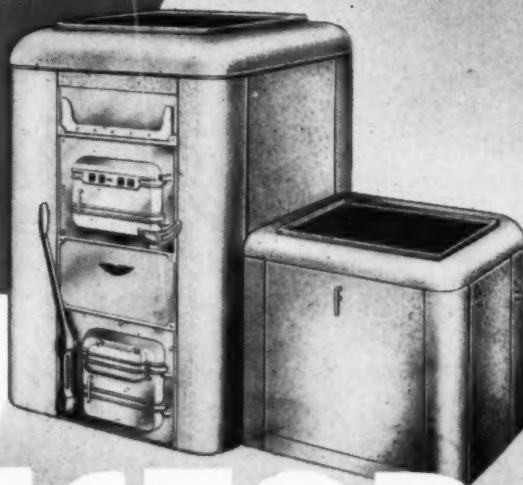
Petro Refineries in: CORPUS CHRISTI AND PORT ISABEL, TEXAS. Fuel Oil Bulk Plants and Distribution Terminals in: BOSTON • PROVIDENCE
STAMFORD • MT. VERNON • NEW YORK • MINEOLA • BROOKLYN • NEWARK • PHILADELPHIA • BALTIMORE • WASHINGTON • CHICAGO

The VICTOR De Luxe FURNACE

Skillfully Designed for

**COAL
GAS
OIL**

Quality since
1890



**SQUARE
ENAMELED CASINGS
AVAILABLE
NOW!**

VICTOR

THE FURNACE WITH HEAT RADIATING FINS

Victor de luxe steel furnaces, quality built since 1890, are ideally constructed for easy conversion from coal to gas or oil. Victor heat radiating FINS plus long effective fire travel through the large, triple flue radiator insure very little loss in efficiency.

FURNACES • OIL BURNERS • GAS BURNERS • STOKERS • BLOWERS • ACCESSORIES

HALL-NEAL FURNACE Co.

VICTOR Quality Furnaces Since 1890

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In rain or snow...
or 20 below



ASSURE LONG LIFE AND TROUBLE-FREE SERVICE

● Berger drainage products have proved unexcelled for long life and trouble-free service under all weathering conditions. Made from galvanized steel—and from copper—they resist rust and the abuses of fabrication and wear. Rigid seams of Berger Conductor Pipe prevent distortion when installed.

Formed in one operation in long length on machines that never vary, Berger Conductor Pipe and the simplified practice Type "K" Gutter are always *uniform*—make installation easy and rapid.

See your local distributor about Berger Conductor Pipe, Accessories and Gutters—also SNAPTITE Eaves Trough, Roofing of all types and Metal Lath. Berger is playing no favorites in distributing its products.



Illustrated above are Berger Style "K" Simplified Type Box Gutter—plain round, corrugated round and corrugated square Conductor Pipe.

**BERGER MANUFACTURING DIVISION
REPUBLIC STEEL CORPORATION
CANTON 5, OHIO**

Warehouses in Boston, Philadelphia and St. Louis



The Mueller Climatrol Type 701 Gravity Steel Furnace is manufactured in three sizes for small and medium-sized homes—93,200, 114,000, and 119,700 B.t.u. input. Construction features: Heavy-gauge, electric-welded heat exchanger, and the durable, revolving-type cast-iron grate assembly illustrated.

Coal-heating with up-to-the-minute efficiency

... for new-home and replacement installations

...the new, easy-to-sell

Mueller Climatrol Type 701 Gravity Steel Furnace

The new Mueller Climatrol Type 701 is an easy-to-sell, easy-to-install, and sure-to-satisfy coal furnace for small and medium-sized homes. It delivers Mueller's famous "climate control" comfort—with economy that takes the strain off the family budget, and efficiency that gets the most out of limited fuel supplies.

The sound design and rugged construction of

the Mueller Climatrol Type 701 provide many talking points that really convince careful buyers, and make them say, "That's the furnace for me—when can you put it in?"

Recommend this Mueller Climatrol with confidence and pride—particularly to replace obsolete equipment you've nursed through several recent winters. Write for complete details.

MUELLER



Climatrol

Reg. U. S. Pat. Off.

L. J. Mueller Furnace Company
2010 W. Oklahoma Ave., Milwaukee 7, Wis.



Announcing...

A COMPLETE LINE OF
QUALITY GAS VENT
AND FLUE PIPE!



Look for the Orange
Spiral Marking



Listed under Re-ex-
amination service
of Underwriters'
Laboratories.

PAYNE "A" VENT PIPE AND FITTINGS

now available in OVAL
as well as ROUND
and in 3', 5' and 10' lengths

PAYNE's new oval pipe features the same *all-metal* construction as our nationally-known round pipe: Inner tube of 99.6% pure aluminum, within galvanized outer casing. Clock-spring steel spacers accurately maintain clearance for dead air space insulation. ★ Low heat capacity of inner liner insures almost continuous hot stack, immediate establishment of draft and elimination of excess condensate.

A SIZE FOR EVERY JOB { Round—3', 5' and 10' lengths; 3", 4", 5", 6", 7" and 8" diameters.
Oval—3', 5' and 10' lengths; 3", 4" and 5" sizes, equiv. to round-pipe diameter.

Write for Catalog, Price List and
New Payne Venting Booklet

PAYNE FURNACE COMPANY
(One of the DRESSER Industries)
BEVERLY HILLS, CALIFORNIA

GAS FUEL
HAS EVERYTHING



COMPLETE FITTINGS for BOTH ROUND AND OVAL PIPE

Ells (Round—22°, 45°, 60° and 90°. Oval—45° and 90°)	Sleeves Storm Collars Tees Siamese Wall Clamps	Drip Caps Globe Tops Roof Jacks Spacers Adapters
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...everything needed for a first class installation.



Automatic Controls...

Buy the Package

No other controls offer all these outstanding advantages



T-30 GAS HEATING SET

This set includes silent K-38 two-wire gas valve, T-70 two-wire Metrotherm and 115-24 volt transformer. Ideally adaptable to gas fired boilers, wall and floor furnaces, conversion burners and warm air furnaces.



T-40 GAS HEATING SET

Package set includes two-stage Thermostat, dual solenoid valve and Transformer. Provides fully automatic, hi-low firing, maintaining ideal temperature control and lowered fuel cost.



T-90 STANDARD THERMOMETER SET

Set combines improved B-60 gas valve, flush mounting Thermometer Thermostat and Pilot Generator. Positive remote temperature control for gas fired furnaces.



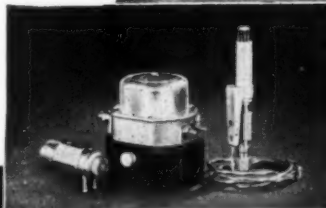
T-23 OIL HEATING SET

For remote thermostatic control of oil heating furnaces, circulating heaters, conversion burners, etc. Includes solenoid oil valve with by-pass adjustment for minimum flow regulation or pilot, two-wire metrotherm and transformer.



BX-230 STANDARD THERMOSTAT SET

BX-230 includes B-60-6B diaphragm gas valve, PG-6 Pilot Generator, and T-80-4 Thermometer type Thermostat with night cut-off. For wall and floor furnaces, circulators, etc.



BX-250 WATER HEATER SET

New all-gas control set combination combines L-61 Tank Thermostat, B-60-6B gas valve and PG-6 Pilot Generator. For hot water heating applications.



T-95 TIMER SET

Includes improved B-60 gas valve, Pilot Generator and Timer Thermostat. Pilot Generator provides operating current, main burner ignition and safety control.

For complete specifications covering the GENERAL CONTROLS broad line of Automatic Pressure, Temperature and Flow Controls, see the new 1946 Catalog 52C. For Gas Heating Controls request Service and Instruction Manuals.

GENERAL CONTROLS presents seven of their convenient packaged sets for compact inventory and simple installation. Here are precision built, field proved package sets most frequently desired by heating contractors and engineers. Buyers can select complete sets in compact cartons; each set includes essential units required. Get improved performance at lower costs through **ENGINEERED** adaptability.

GENERAL

301 ALLEN AVENUE



CONTROLS

GLENDALE 1, CALIF.

Manufacturers of Automatic, Pressure, Temperature & Flow Controls

FACTORY BRANCHES: PHILADELPHIA • ATLANTA • BOSTON • CHICAGO • DALLAS
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HOUSTON • SEATTLE • SAN FRANCISCO • DISTRIBUTORS IN PRINCIPAL CITIES

37-1



Joseph Laurenzi's home in Bogota, N. J., heated by a Thatcher oil fired air conditioner. Less than 800 gals. of fuel yearly, heats these 7 large rooms.

How a Heating Expert Solved His Own Heating Problem



Joseph and Frank Laurenzi, Bogota Sheet Metal Works, Inc. "... installed thousands of Thatchers in the last 26 years, and everywhere we've left completely satisfied customers. The fuel savings customers get with Thatcher makes these customers our best salesmen."

For 26 years Joseph Laurenzi of Bogota Sheet Metal Works, Inc. has handled Thatcher and other types of heating equipment. When he built his own home, Laurenzi installed a Thatcher oil fired air conditioner.

Less Than 800 gals. of Fuel Heats 7 Large Rooms

For 5 years, Laurenzi's Thatcher unit has heated 7 large rooms on less than 800 gals. of fuel per year. What's more, his Thatcher unit has remained completely service-free.

For Increased Profits — Sell Savings Like This

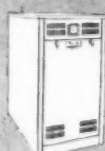
Your customers want savings like this. That's why it's easy to sell Thatcher. Just cash in on the reputation for economy and trouble-free service Thatcher's been building for 97 years. Because people already know and trust the Thatcher name, you recommend yourself when you recommend Thatcher — your warm friend since 1850.



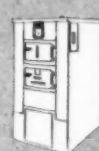
V Series Comfortmaster
Oil fired
Air Conditioner



GA
Comfortmaster
Air Conditioner



Series A
Oilmaster
Boiler



Triple-Fire
All-Purpose
Boiler



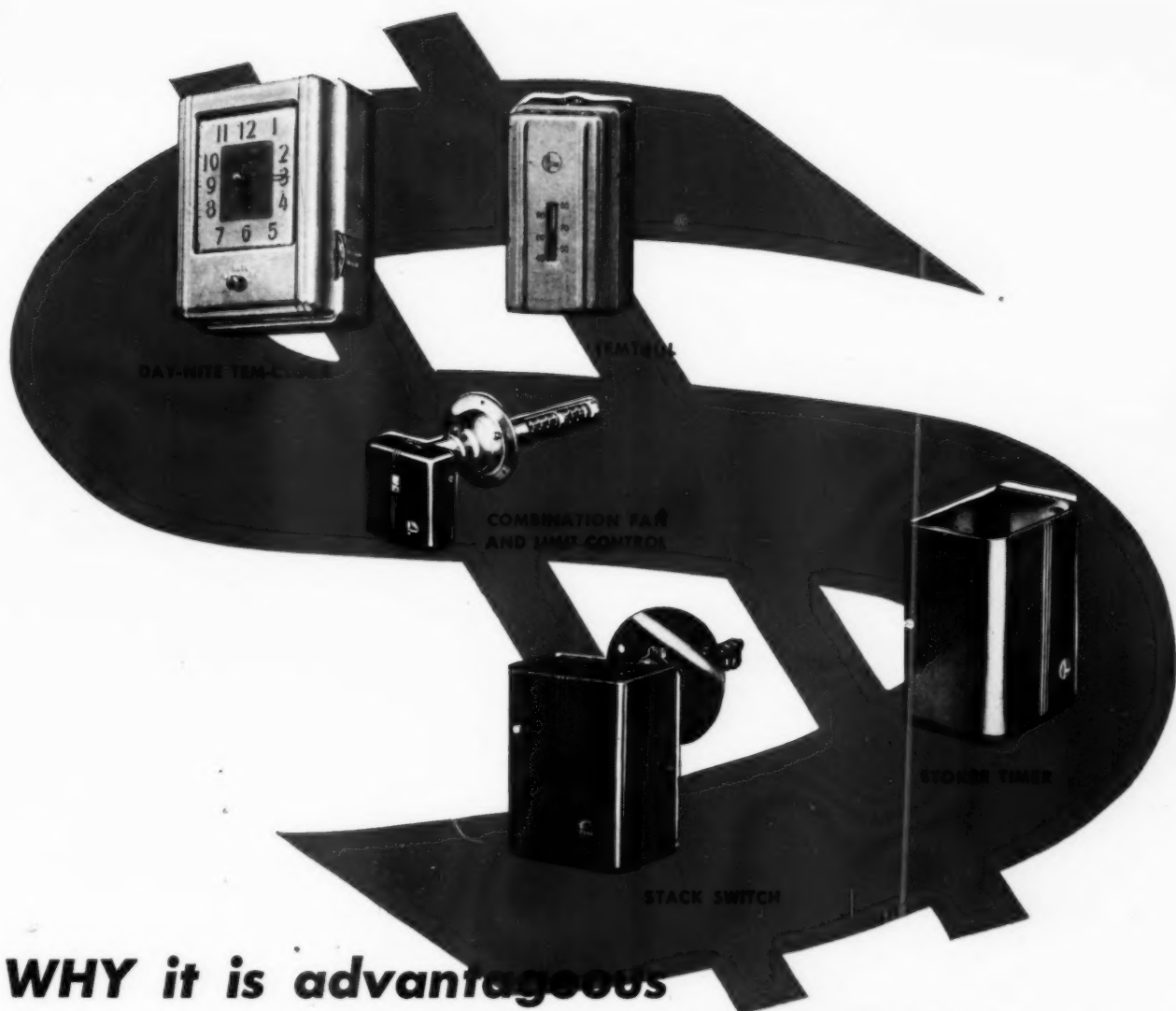
Thermaster
Gravity
Furnace



Thatcher

FURNACE COMPANY
Garwood, New Jersey

SPECIALISTS IN HEATING SINCE 1850



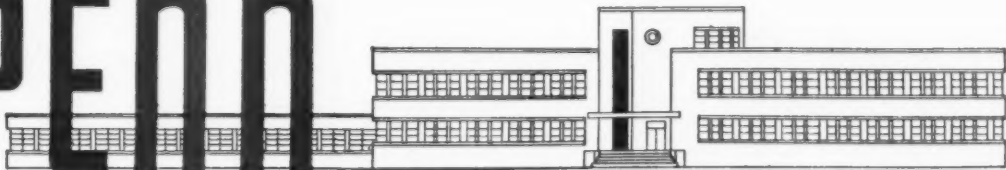
WHY it is advantageous to sell PENN Controls

Penn two-wire construction makes installation simple and easy . . . saving time and money. Then, customer-appreciated features win and maintain the buyer's acceptance and satisfaction. Take PENN Tem-Clock, for instance. This control provides *fully automatic control* of night set-back temperature . . . resulting in *greater comfort, greater convenience and greater fuel economy*. It can be installed in any room desired by the purchaser, *regardless of the location of the thermostat*.

Then, there's PENN Temtrol, the thermostat with *the* heat-anticipating feature. It as-

ures true heating comfort by keeping room temperatures extremely close to the selected level.

"Extras" like these are found in all PENN heating controls—primary controls, limit controls and relays. Remember, in PENN Controls, you get *extra* dependability, *extra* efficiency, *extra* accuracy and *extra* ease of installation. For customer satisfaction . . . specify PENN. Penn Electric Switch Co., Goshen, Indiana. In Canada: Penn Controls, Ltd.; Toronto, Ont. *Export Division: 13 E. 40th St., New York 16, U. S. A.*

PENN 
AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, ENGINES, PUMPS AND AIR COMPRESSORS

A DISTINCTIVE FEATURE- FOUND IN *Luxaire's* NEW Vaporizing Pot Type Oil-Fired Units



IT'S SIMPLE—IT'S EASY—IT'S QUICK—to remove the complete burner assembly from Luxaire's new, vaporizing pot type units. Remove 8 screws, a single cabinet panel, loosen 2 wing nuts and lift the burner out.

Engineering, construction and servicing features like this, are outstanding in the new, Luxaire line.

Cabinets have tight fitting floors that eliminate basement platforms and grouting . . . durable, steel heating elements with auto-

matic, submerged arc welded seams-non-porous, deep-penetrating . . . heat absorbing radiation shields that do away with noisy inner liners . . . stainless steel flame deflectors.

Analyze these features! Compare these features! See why Luxaire is the outstanding line of vaporizing pot type oil fired units.

**ALL LUXAIRE VAPORIZING POT TYPE OIL FIRED UNITS
ARE UNDERWRITERS' LABORATORIES APPROVED**

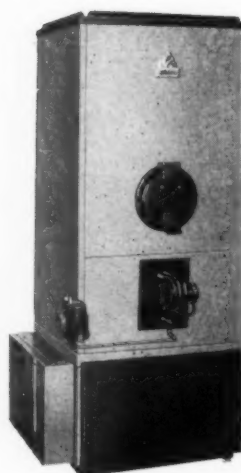
THE C.A. OLSEN MANUFACTURING COMPANY

Luxaire



HEATING & AIR CONDITIONING UNITS

ELYRIA 12, OHIO



Series VH
Oil Fired, Steel Utility
Air Conditioning Unit



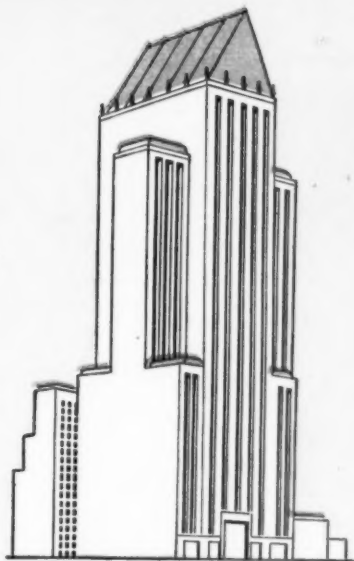
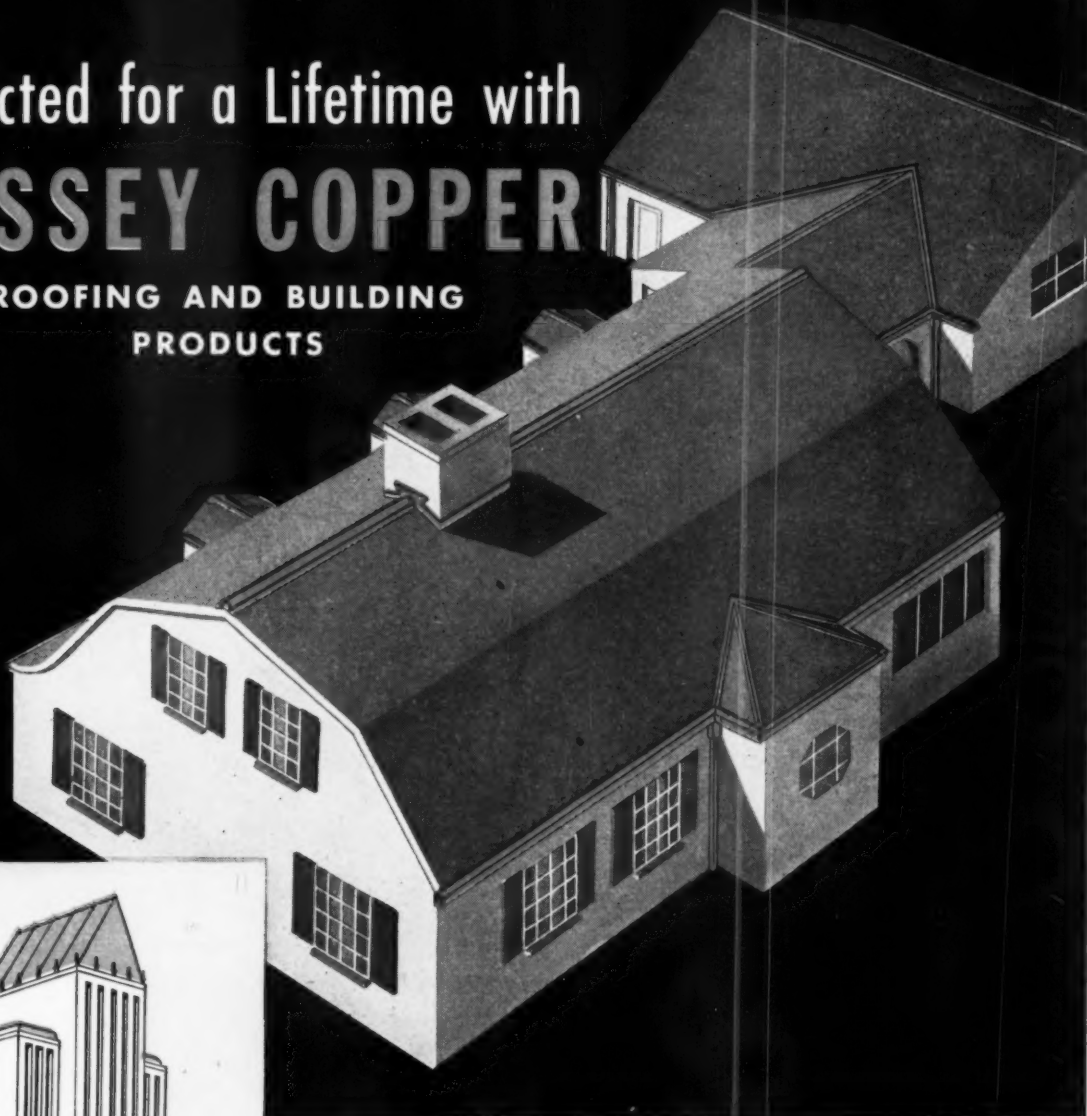
Series VG
Oil Fired, Steel
Gravity Unit



Series VA
Oil Fired Steel
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I SEAL A CAN—



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I WIPE



A JOINT—AND FILL



A DENT—I RUN A SEAM



—OR FIX



A VENT

what am I?

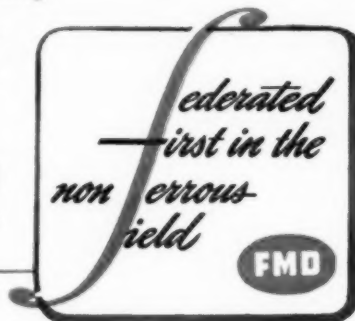
► I'm a low-melting, free-flowing alloy that bonds quick as a wink. Know me? I come from a complete line of non-ferrous metals and alloys you can get easily anywhere in the United States. Know me now? I'm solder, of course. Federated solder.

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Every part is die-pressed!

Why "die-pressed"?

Because the steel under the tremendous pressure of the scientifically-designed dies flows into the required shapes... with molecular changes taking place uniformly over the entire area -- completely eliminating the hazards of fracture common in the old-style "breaking" or bending method (Flanges, necks, openings, holes, corrugations and depressions are included in these stamping operations.)

And then electronically controlled automatic seam and spot welders produce the sub-assemblies and assemblies.

That's mass precision production -- high pressure -- American style.

That's why you -- and your customers -- get more with a MOR-SUN!

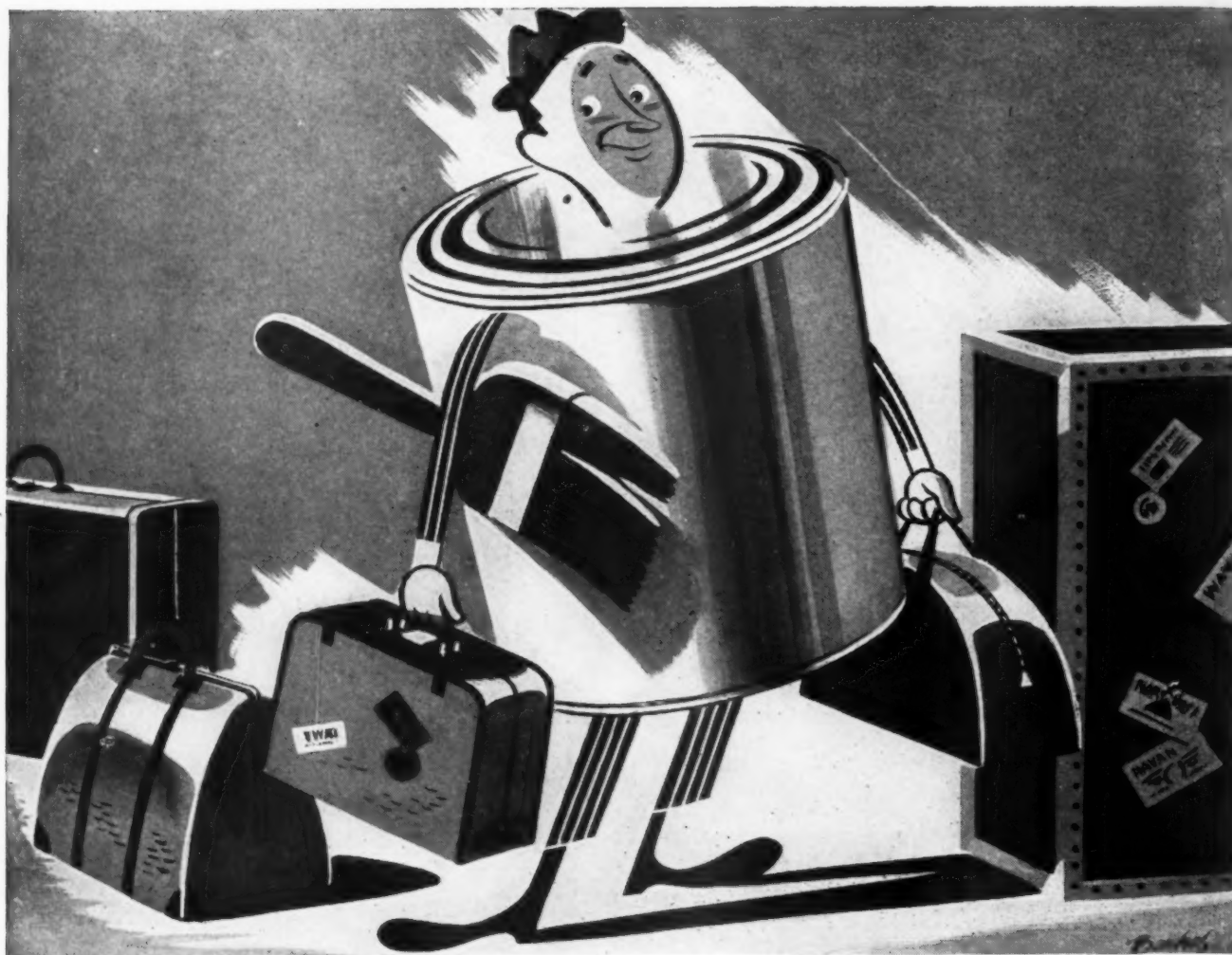


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This paint's going on air ducts and other sheet-metal work made of ARMCO Galvanized PAINTGRIP Steel. Unlike ordinary galvanized sheets, this *special-purpose* steel has a friendly surface that takes paint *and holds it* tenaciously. Raw zinc can't dry out the vital oils in the paint and cause it to peel and flake off before its time.

ARMCO Galvanized PAINTGRIP is Bonderized at the mill. This treatment gives the steel a neutral film that insulates the raw zinc from the paint. Weather-exposure tests prove that paint lasts several times longer on PAINTGRIP than it does on ordinary galvanized

or uncoated steel. And remember, it's actually more economical to use PAINTGRIP than to use ordinary galvanized steel and acid-etch before painting.

Gutters and downspouts, fume and air ducts, fan casings, furnace casings and ventilators made of ARMCO Galvanized PAINTGRIP Steel look better and last longer. This means lasting satisfaction for the owner and good reputation for the sheet-metal contractor who installs the work. The American Rolling Mill Company, 1241 Curtis Street, Middletown, Ohio. Export: Armco International Corporation.

THE AMERICAN ROLLING MILL COMPANY

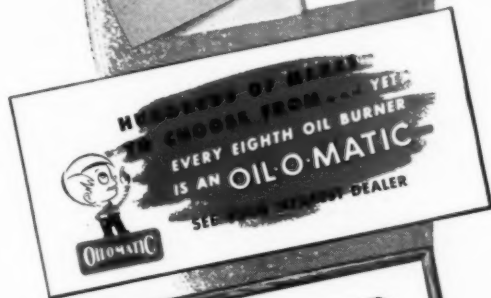
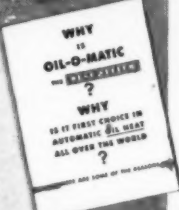
- SPECIAL-PURPOSE SHEET STEELS
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**ONLY a DIFFERENT
and BETTER PRODUCT
MAKES POSSIBLE
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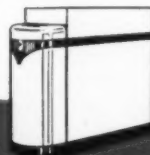
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Sheets	Hexagons	Angles	Pipe Fittings
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RESIDENTIAL
AIR CONDITIONING
WARM AIR HEATING
SHEET METAL CONTRACTING

How Taft-Hartley Bill Affects You

THE Labor-Management Act of 1947, without much question, will have far-reaching effects on all industries. But it will be well to bear in mind that the act is neither the "slave labor bill" it was tagged by labor during the frenzied oratory which preceded its passage, nor is it an emancipation from all control for employers. True, it will place a few strings on labor unions; it can force unions to modify or eliminate some of the more reprehensible practices; it marks the end of an era of 14 years of government promotion and protection of unions; but the most important change probably will come from the new standards and procedures set up to govern labor-management relations.

The act itself is a complex document, full of intricacies, technical revisions which only time and courts can settle. The act opens up a new era of rules, regulations, forms to file, records to keep, procedures to be followed which will require years to digest and establish.

It will also be well to bear in mind that, basically, the act is aimed at practices which, in general, have not been too much of an insurmountable problem in the warm air heating, sheet metal industry. In making this statement there is the danger that future interpretations and applications may prove the statement incorrect, but for the moment it appears that the following are the items in the act which do and will affect us.

The act aims to make labor organizations responsible for the contracts they enter into. Should strikes, walkouts, stoppages be called by labor in violation of a contract, the employer may now sue the union for damages suffered.

The act will tend to curb (but maybe will not end) jurisdictional and sympathy strikes—a phase which possibly will go far to remove one of the real headaches of the construction industry. The act labels a jurisdictional strike an unfair labor practice and permits the employer to discharge strikers and sue the union for damages sustained.

Under the act, unions must now file with the Secretary of Labor certain information—the constitution and by-laws; name and compensation of the three prin-

cipal officers and other officials who make more than \$5,000 a year; how officers and agents are chosen; initiation fees and dues; an annual report of receipts, payments, assets and liabilities; a financial report to union members. Probably this has never been a particular problem in our industry, but the fact that such information now becomes public record is indicative of the new trend in labor relations.

One of the most discussed phases of the act is the (a) banning of the closed shop; (b) unions shops restricted but permitted, providing the union gets 30 per cent of the employees to petition for a union shop; the NLRB holds a vote among all the employees the union represents; a majority of the employees represented by the union vote for the union shop. Even after a union has successfully gone through these steps, an employer is not required by the law to grant the union shop agreement but probably would do so. Interesting is the fact that some labor leaders have already indicated they will try not only for a union shop agreement but will also make a tacit understanding with the employer to continue a closed shop—this may be dynamite for the employer. It would not seem that this is or will be a major problem in the construction industry unless connivance rears its head and until a depression causes whole areas to attempt lowering of costs by driving down wages.

The act permits an employer to handle an individual grievance without the union entering into the argument so long as the settlement does not violate the union contract.

According to present interpretations, the act probably makes the union obliged to negotiate any changes in the contract and prohibits a union from telling members certain sections of a contract are to be construed in a certain way until the question has been thrashed out in labor-management meeting.

Under the act, if a union breaks off negotiations and calls a strike as a means of forcing its demands on an employer while negotiations are in progress, the employer can file an unfair practice charge with NLRB, and NLRB can ask a federal district court to issue an injunction for the employer's benefit. Also a union

(Continued on Page 141)

★ ★ ★ ★ ★ ★ ★ ★ ★ ★

Arnold Kruckman's Washington Letter

★ ★ ★ ★ ★ ★ ★ ★ ★ ★



The Overall Picture—Europe and Here

CONGRESS may recess, not adjourn, between the 26th and the last day of July. It is apparently strongly tempted to recess in order to take the initiative from the President. If the Congress simply recesses it may come back any time its leaders determine there is need for a session. On the other hand, if it adjourns it can come back only when the President calls it into a special session. The phase that will undoubtedly bother the members of the Congress is the fact that if they simply recess and are called back by their leaders, each member must pay his own traveling expenses. The nation pays the expenses when they come and go from a stated session; when they leave during a recess they pay their own expenses because whatever may happen thereafter is still part of the original session. On the other hand, when the President calls them back to a special session it is a fresh transaction and the nation pays the bills. Mr. Truman, as all know, is a very human person, and the chances are that he will call the Congress into special session, if the session is necessary, to help them avoid an expense that really should not be placed on each individual's shoulders.

There seems little doubt the special session will be called. The foreign situation requires special attention. The regular session will do well if it cleans up all the appropriation bills, half of which are still on the calendar as of the end of June. There is little prospect that any other important legislation will be enacted until next year, except that which will be proposed at the potential special session. The hope is that the special session will present an opportunity for consideration and determination of the whole budget of problems involved in our foreign relations. If the majority of the members have their way, no other subject will be discussed. Apparently the President has the same idea. If he calls the session he will undoubtedly limit the call to foreign affairs. The foun-

dation of any consideration of foreign affairs obviously will be the problems presented by the political deviousness of Russia. But part of the whole complicated matter are the various questions that are involved in foreign trade, and the loans, credits, grants, gifts, and many types of aid and relief we are expected to give Europe, Asia and Africa in order to cure the sick world, to set it aright, so that global life may become relatively normal again. We are to be the Good Neighbor who is to be physician, pharmacist, nurse, and inexhaustible resource for those who "have not."

Will Russia Cooperate?

There is little optimism in the Capital about the probability that the Russian participation in the discussion of the Truman Doctrine, now called the Marshall Plan, will lead to any material relaxation of the tensions. Italy, Austria, France, Czechoslovakia, western Germany, even other parts of Europe not usually regarded as colored by the Red tinge, are expected to come more and more under the sway of Communism, either by the infiltration, which is said to be going on in India, China and other Asiatic and African countries, or by the manner in which Hungary was made a satellite. The former Premier of Hungary, Nagy, lives in the hotel where your correspondent has made his home and workshop for more than a decade. The Hungarian's family is with him. The beastly character to which European politics have degenerated come home to one when one observes the bright and friendly little seven year old boy of the family, playing about the place, eager to make friends with the other youngsters, and one remembers this is the little fellow whom they held captive in Hungary until his father, then Premier, sojourning in Switzerland with the rest of the family, agreed to resign to regain possession of the child. The implication is plain that if the father had not stepped down to make room for the Com-

munists, the youngster probably might never have been seen again. There appears to be little difference between this type of "statesmanship" and the type of gangsterism which produced Hauptman and the Lindbergh kidnapping. The latest popular term here to designate the gangster governments is to call them police states. The world is certainly going badly askew when it libels the guardians of the peace by calling the product of the bandetti now running things in various parts of the world police states.

The Near Future

Most of us here in the East who have the courage to follow the logic of thought to its unavoidable conclusions feel, in the broadest sense, that the Third World War is actively in the making and that the present maneuvering is chiefly the process of choosing sides. Even the cautious Chief of the General Staff, Gen. Eisenhower, told Congress that war is possible in 1948. The next six months—some say three months—may develop startling events, with startling shocks for many complacent business people. Even Eisenhower warned Congress that our military organization is a bad second to that of the Russians. In the simplest and plainest terms it is generally agreed here, in the quarters where candor is practiced, that the Russians are engaged in bringing their lines of approach as close as practicable to our boundaries in the Pacific and the Atlantic areas, while we are attempting to develop similar strategy in making countermoves in Asia and Europe. Our program, civil and military, is expected to cost us between \$8,000,000,000 and \$10,000,000,000 per year, for at least three years, if we have the three years of grace to do the job abroad which has been indicated by the White House. How this financing may be justified, together with the promise of a reduction in taxes, apparently baffles even the leaders in Congress. The best answer they can give is that the United States is so powerful and inexhaustibly resourceful that it can do anything under pressure.

The Money Is Rolling Out

The Greece-Turkey business is under way, supervised by the New Deal Republican from Nebraska, former Gov. Griswold. The organization which will make the Greece-Turkey enterprise function has been put together in the State Department, which irritates the Congress, and is patently built up with one eye on the effect of the bestowal of a good job on the 1948 campaign. It may interest you to know that some of the jobs go to the friends of Republican Senators as well as to the Democrats who are loyal to the Administration. A Republican vote will be just as helpful in the Senate when the foreign policy is jelled as is a Democratic tally. There are 175 jobs in the upper echelon of the new foreign aid organization which pay amazingly good salaries. It requires small perspicacity to realize that there are vast numbers of more new jobs at high salaries in the offing when the \$10,000,000,000 per annum program really starts to roll. The Congress is distressingly conscious of the need for action in order to make an attempt to set the machinery of the world in motion again, and it knows the action can be implemented only by vast sums of

credit and gifts, which means our money, vacuumed into the Treasury through the tax collector will be used. The aspect that will cause most oratorical explosions, when the deal comes up for discussion in the special session, is the parallel consciousness that the stupendous fiscal resource also provides the Administration with the substance that can legitimately be used to make the campaign of 1948 roll in the right direction.

Rate of Export

Our exports today are going overseas at the rate of 20 to 25 per cent of the total of annual manufacturing production. These exports are supplying the backbone for the high-speed operation of our economy, and the amazing employment of great numbers of workers. Over-all, latest reports reveal, upwards of 59,000,000 persons are at work today in this country. This is greater than any number that was ever simultaneously employed in the work of this nation, even during the most hectic days of the war. Over 1,000,000 women have again left their homes and are working in factories, offices, anywhere where they may obtain jobs. The Department of Labor has found that in almost every industrial region women are clamoring for jobs to the tune of 200 to 500 per cent more than were making applications for employment early in Spring. Not much is said about it, but there is considerable increase in the employment of women and men in the plants which are producing more material that may be useful in war. Also, there is much increase in certain types of activity connected with export. Government calculates that every billion dollars worth of export merchandise directly is responsible for the employment of a million persons and indirectly puts at least 6 to 10 times more at work. Exports supply the same momentum now which in 1945 stemmed from war needs, and in 1946 sprang from the tremendous long-repressed domestic demand. Foreign dollar resources are running low; most nations either have not or cannot sell us anything we need at this time. This is the current position which causes the Washington people, who know the ropes, to be jittery. The foreigners can't buy unless they have our dollars. Our people are feverishly eager to launch the larger foreign program in order to maintain and expand our export activities. They fear if the flow of goods and commodities going abroad slow down, we really will have the recession, not merely the propagandized phony recession which is attributed to foreign agents or to some people in high places, as General Electric headman Wilson puts it.

Here is another aspect of the situation which troubles our lawmakers. The majority in the Capital appear to feel it is worth the huge price of grants and loans to sustain our more or less artificially stimulated export prosperity and that it should be kept operating at its present tempo for two or three years in order that we may get ready for any eventuality and to solve the problem of building a dam against a possible recession. But there is another sober and substantial school, not wholly isolationist, whose followers honestly think we should get out of Europe as fast as we can, lock, stock and barrel, shrink our foreign com-

(Continued on Page 143)

Shop Problems in Mathematics

By J. P. Harner

As a man long familiar with the Sheet Metal field Mr. Harner has felt that a discussion of some of the basic problems in mathematics that arise from day to day would be of value to our readers. We think you may agree. A second article follows next month.

THE average man years ago learned the rules governing most mathematical calculations, though a multitude of other interests allowed many of these useful rules to slip the mind, depending on charts and tables when need for such knowledge arose.

If the few principal rules governing the mathematics of our particular business could be assembled in a single article, an occasional reading would be of material benefit. The charts we see so conspicuously placed on the shop walls will become a time saving convenience in place of an absolute necessity.

Figuring Circumferences

In the average sheet metal shop doing job or custom work, many different diameters of pipe are made each day or week, and as a means of determining the circumference, a circumference rule is provided for the smaller diameters and a circumference chart for the larger sizes.

When not in use, the circumference rule is usually hung near the circumference chart, while nearby is usually seen a chart showing the fractional parts of an inch with their decimal equivalents. This is good shop management. The charts are placed there as a time and error saving convenience; they do not, however, excuse those using them from not understanding the principles on which they are based so that they may carry on without them when occasion demands.

In the following discussion of arithmetical calculations pertaining to our particular trade, effort has been made to present it in as informal a manner as possible.

Unit of Measurement

The unit of measurement on virtually every chart is given in inches and decimals; these decimals must be reduced to fractions before they can be applied to the work in hand through the medium of the particu-

lar type foot rule in use and the rule for converting these decimals to common fractions is as follows:

Rule—Reducing the Decimal to a Fraction: When it is desired to reduce a decimal part of an inch to a fractional part of an inch, multiply the decimal by the fraction whose denominator is wanted.

The fractional part of an inch most commonly used in the shop is $1/8$ or $1/16$ inch, as shown on the foot rule; $1/32$ inch may be estimated closely enough for all practical purposes though not shown on the average rule.

Example: The circumference of a 11 inch pipe is shown on the circumference chart to be 34.5576 inches. To reduce the decimal .5576 to a fraction, choose a fraction for multiplying that is smaller than the decimal; as .5576 is seen at a glance to be slightly more than $1/2$ inch, any of the above mentioned fractions may be used; preference is usually given the smaller fractions as $1/16$ or $1/32$ inch.

$$.5576 \times 16 = 8.9216 \text{ sixteenths or } 9/16 \text{ inches.}$$

$$.5576 \times 32 = 17.8432 \text{ thirty-seconds or } 18/32 = 9/16 \text{ inches.}$$

The circumference of the 11 inch pipe being $34 \frac{9}{16}$ inches, to this must be added material for laps if any, or if the pipe has a specified inside or outside diameter, the following allowances must be made.

Material Allowance

Explanation of inside and outside dimensions: In light weight material up to approximately 20 gauge or the capacity of the crimper, little attention is given the material thickness as the end of the section of pipe is crimped to telescope into the adjacent section; where the pipe is made for one end to telescope without crimping, then allowance of additional material must be made on one end or the other and reduced.

The circumference shown by the chart when laid

out on the metal and formed into a pipe is that of an imaginary circle without thickness. When 12 gauge is cut for an 11 inch pipe and rolled into a true circle, the 11 inch diameter will be approximately from center to center of the metal, the actual inside diameter being somewhat less than that shown on the chart, while the actual outside diameter somewhat greater. For all practical purposes to secure a specified inside diameter of 11 inches, $3\frac{1}{2}$ times the metal thickness must be added to the circumference, or if a specified outside diameter is desired, $3\frac{1}{2}$ times the metal thickness must be deducted from the diameter. If it is desired to telescope one end of a section into the next, 7 times the metal thickness must be deducted from the circumference of one end or added to one end, as the case may require.

On checking the U. S. Standard gauge chart, 12 gauge steel is seen to be .109 inch thick; $.109 \times 3\frac{1}{2}$ or $.109 \times 3.5 = .3815$ inch. $.3815 \times 32 = 12.2080$ thirty-seconds or $6/16$ inch. $34\frac{9}{16} + 6/16 = 34\frac{15}{16}$ inches; for practical purposes 35 inches for a 12 gauge pipe 11 inches inside diameter, not including laps, is used in welded work.

Outside diameter: If, for example, a 12 gauge pipe 11 inches outside diameter is desired, deduct $3\frac{1}{2}$ times the metal thickness. $.109 \times 3.5 = .3815 = 6/16$ inch. $34\frac{9}{16} - 6/16 = 34\frac{3}{16}$ inches circumference as in welded construction where laps are not required.

Watch That Decimal Point!

The greatest care should be used with decimals as to the proper placing of the decimal point in the product. The position of the decimal point in the product is determined by the number of figures to the right of the decimal point in the multiplicand.

Thus, $.5576 \times 16 = 8.9216$; there are four figures to the right of the decimal point in the multiplicand, .5576. The decimal point is placed in front of the fourth figure from the right in the product, 8.9216. There is no exception to this rule.

Multiplying Decimals

Multiplying two decimal numbers: The number of figures to the right of the decimal point in the product equals the number of figures to the right of the decimal points in the multiplicand and multiplier.

Example: $.109 \times 3.5 = .3815$. There are three figures to the right in the multiplicand, .109, and one to the right in the multiplier, 3.5. Making four places to the right in the product, .3815.

In every case the smaller decimal number must be used as the multiplier. Suppose, for example, this problem came up.

$$\begin{array}{r} .365 \times .125 \\ \hline .365 \\ .730 \\ 1825 \\ \hline .045625 \end{array}$$

Here are three figures to the right of the decimal point in the multiplicand, .365, and three in the mul-

tiplier, .125; the product therefore must have six figures to the right of the decimal point. In multiplying these figures a product of only five figures is secured, a cipher then must be added to the left as shown to make the required six figures.

Dividing Decimals

While the necessity for dividing one decimal by another is infrequent in metal work, the explanation may not be out of place.

Rule: Subtract the number of decimals in the divisor from the number of decimals in the dividend; the remainder is the number of figures to the right of the decimal in the product.

Example:

$$\begin{array}{r} 45.60 \overline{) 205.200} \{ 4.5 \\ 182\ 40 \\ \hline 22\ 800 \\ 22\ 800 \end{array}$$

Number of decimals in the divisor .60 is 2, number of decimals in the dividend .200 is 3, $3 - 2 = 1$. The decimal point is placed one figure from the right in the product. If, however, the division does not give an exact product, a cipher is added to the remainder to form a partial dividend and the division is continued until the product is exact or a cipher is obtained as a figure in it.

Presume this problem came up: $510\frac{1}{4} \div 15\frac{3}{4}$. For convenience reduce the fractions to decimals, $510.25 \div 15.75$.

$$\begin{array}{r} 15.75 \overline{) 510.25} \{ 32.3968 \\ 472\ 5 \\ \hline 37\ 75 \\ 31\ 50 \\ \hline 6\ 250 \\ 4\ 725 \\ \hline 1\ 5250 \\ 1\ 4175 \\ \hline 10750 \\ 9450 \\ \hline 13000 \\ 12600 \\ \hline 400 \end{array}$$

The division is made as though the divisor 15.75 and dividend 510.200 were whole numbers; it will be seen that after the last figure 5 in the dividend was used, four ciphers were used as additional figures. These four ciphers and the decimal .25 make six figures to the right of the decimal point in the dividend, with two in the divisor .75, $6 - 2 = 4$. The decimal point is placed in front of the fourth figure from the right in the product. In this particular example the division could be carried out to excessive length before a cipher is obtained; for all practical purposes the division can be terminated after the fourth decimal place in the product as indicated by the following proof: $15.75 \times 32.3968 = 510.249600$ or 510.25.

NEWS SUMMARY OF THE MONTH

Warm Air Furnace Shipments

SHIPMENT of warm air furnaces for the first quarter of 1947, as reported by the Department of Commerce, are as follows:

Fuel	Cast Iron	Steel	Total
Coal	33,374	46,992	80,366
Gas	11,728	55,732	67,460
Oil	(Cast iron and steel)		54,710

202,536

Total shipments in the first quarter of 1946 totaled 124,553. The gain for 1947 over 1946 is 62 per cent.

Fill Oil Tanks Now

IN THE editorial in the June issue, the possible shortage of fuel oil in some areas next winter was pointed out, with reasons for the shortage.

Oil Heat Institute, Distribution Division, is now sending to all members a special bulletin suggesting that it's not the oil, but steel which may be the prime cause of the shortage. There will not be steel for domestic tanks, for new distributor tanks, for tank cars, barges, pipe lines and bulk storage facilities. Therefore, the storage facilities existing today may become the ceiling on the amount of oil which can be stored for next winter.

OHI is urging every distributor and oil burner dealer to start a campaign to get domestic tanks full now—even to putting oil in extra small containers if necessary. OHI is also suggesting that distributors search out idle storage of any kind and fill it now. One-third of next season's burning oil must be in the users' basements by November 30 and, in addition, all bulk stations must be filled by November 30 if there is to be avoidance of breakdown in supply next winter, says OHI.

Aluminum Warning

RECENTLY contractors in the industry have received through the mail offers of "surplus" aluminum and new aluminum in coils from concerns not ordinarily identified with materials distribution. The aluminum offered is specified as 2 S alloy-H temper, .025 gauge, 28-inch width, 22½ cents per pound in 1400 pound coils.

Some contractors using this material report that this material does not go through the roll forming machines without breaking and cannot be bent flat or opened and bent without cracking. Readers should investigate carefully and ask for large samples in order to try the material in the machines.

Wood "Panels" Not Permitted

The National Board of Fire Underwriters, New York 7, N. Y.

On February 15, 1946, you wrote as follows: "The committee has discussed panel heating and has approved an amendment covering the use of warm air panels, but this requires the chambers having external surfaces used as heating panels to be enclosed with noncombustible material."

We do not understand how a warm air floor panel can be built following this recommendation, so we are writing to inquire if the amendment has been incorporated in your standards and whether or not your organization will now permit warm air floor panels constructed of wood joist and wood sub-floors and a noncombustible lower surface, providing the air, after passing through the panels (between the joist), is admitted to the rooms by a slot or register?

Yours very truly,

AMERICAN ARTISAN.

American Artisan,
Chicago 2, Ill.

Warm Air Panel Heating

Replying to your letter of May 22, we are pleased to send you herewith a copy of the standards of the National Board of Fire Underwriters on Air Conditioning, Warm Air Heating, Air Cooling and Ventilating Systems, dated October, 1946. We call your attention to Section 345 on page 30, which deals with warm air heating panels. This standard does not permit the use of warm air floor panels constructed of wood. Neither does it permit the use of spaces between wood joists for conveying warm air to rooms, as Sections 310 and 340 require ducts to be of noncombustible material.

We believe it is generally recognized by those who have studied the problem that using wood for the construction of warm air ducts or chambers creates a fire hazard which should not be permitted.

Yours very truly,

GEORGE W. BOOTH,
Chief Engineer.

Continue Repair Loans

REPAIR loans under Title I of the National Housing Act will be continued for two more years with the signing of Senate Bill No. 1230 by President Truman.

New contracts and regulations have gone forward to approved lending institutions. They contain no major changes in established procedure.

New reserves will be established to cover the period of extension beginning July 1, 1947.

REMOVAL of limitations on repair and maintenance of homes, stores, and most other structures should mean a substantial rise in construction activity. Thousands of property owners have been waiting for the opportunity to undertake major repairs and improvements which had to be postponed during the war and the period of limitations.

Recent reports from the Office of the Housing Expediter indicate that requests for approvals in excess of the limitations had been coming in at the rate of about 20,000 a week during recent months. Removal of restrictions means that these projects can proceed at the discretion of the owner.

Estimates indicate that in the absence of restrictions, the volume of repair and maintenance will run at the rate of \$6 billion annually for several years, in view of the huge backlog of needed improvements built up as a result of past materials shortages and wartime limitations. The removal of limitations means that owners of industrial structures can repair and enlarge their buildings, and home owners can proceed with installation of new kitchens, bathrooms and heating plants, adding extra rooms, insulate their homes, re-roofing and other major improvements. Unrestricted repair and maintenance are expected to provide approximately 2,000,000 jobs annually for construction and allied workers.

Post-war Problems

H. E. FOREMAN, managing director of the Associated General Contractors of America, told contractors in attendance at the spring meeting of the AGC governing and advisory boards in Seattle that high costs, governmental restrictions, material shortages and uncertain business conditions have contributed to the production drop while wage increases, decreased efficiency and lack of firm prices from sub-contractors and suppliers are among the factors resulting in high costs.

The AGC is asking architects, engineers, contractors, producers and distributors of material and equipment and others to help in eliminating these uncertainties from the industry. The AGC takes the position that firm prices must now be quoted owners by contractors, and that the contractors themselves must require firm prices from sub-contractors, material and machinery dealers; that all possible steps must be taken to encourage workmen to produce a day's work for a day's pay and to eliminate wasteful practices; that efficiency in management must be improved; that owners should be discouraged from demanding the completion of projects at speeds which require overtime work at premium rates of pay, or procedures requiring extra costs, and that the public should be informed that construction costs have reached their peak, and as readjustments are made in the national economy, gradual increases in efficiency and economy can be brought in construction, thus assuring that the public will receive the maximum for its investment in construction.

Increased Building Costs

HOMES that could have been built for \$5,000 in 1940 cost approximately \$9,000 to construct at present, according to a recent survey of the Northwestern National Life Insurance Co. The survey showed that almost half, or \$1,800 of the \$4,000 increase, has taken place within the last year and that there has been an average increase of 80 per cent in residential building costs in 26 major cities since the end of the war. Building material prices have shown an average increase of 76 per cent since 1940, closely paralleling a rise of 77 per cent in the hourly wage costs over the same period, according to the survey.

In the construction industry hourly wage rates have risen 32 per cent for skilled workers and 62 per cent for unskilled labor since 1940, but actual on-the-site costs are running as much as 80 to 100 per cent above 1940 costs. The report stated that material prices are beginning to show a tendency to level off and that with materials now in better supply, more efficient use of labor probably can be made from here on.

The survey compared recent increases with those during the World War No. 1 era when building costs rose approximately 150 per cent in the six year period, 1914 to 1920. The study listed percentage increases in home building costs in representative cities since 1940 as follows: Atlanta, 108.1 per cent; Baltimore, 95.8 per cent; Birmingham, 88.6 per cent; Boston, 78.4 per cent; Chicago, 66.6 per cent; Cincinnati, 85.6 per cent; Cleveland, 88.1 per cent; Des Moines, 69.1 per cent; Detroit, 91.8 per cent; Indianapolis, 87.7 per cent; Los Angeles, 93.4 per cent; Milwaukee, 87.3 per cent; Minneapolis-St. Paul, 80.2 per cent; New York, 77.2 per cent; Philadelphia, 92.1 per cent; Pittsburgh, 73.4 per cent; St. Louis, 83.4 per cent; San Francisco, 85.7 per cent, and Washington, 84.3 per cent.

Older Workmen

W. J. BARNEY, chairman, A.G.C. committee on apprentice training, reports that 5.5 per cent of all workers in the construction industry, or 96,000 men, are now 65 years of age or older. There are 1,100,000 skilled mechanics now employed and approximately 90,000 apprentices in training.

Gas Sales Rise in May

SALES of the gas utility industry to ultimate consumers during May, 1947, were 2,312,585,000 therms, an increase of 14 per cent over sales in the same month last year, the American Gas Association reports. The Association's index of total gas utility sales for May stood at 204.4 per cent of the 1935-1939 average. For the twelve months ended May 31, 1947, total sales of gas were 27,961,393,000 therms, an increase of 8.8 per cent over the previous year.

Construction Boom Slows Down

By Thomas S. Holden

President, F. W. Dodge Corporation

In his capacity as president of the F. W. Dodge Corporation, largest construction statistic company in the nation, Mr. Holden is well qualified to discuss and analyze the present state of that industry.

The Department of Commerce reported that business expansion, which has been uninterrupted for more than a year, halted in April, with small upward and downward adjustments cancelling each other. That is not unusual and there is less to fear from an expansion which pauses to get its breath and to take its bearing than there is from one which continues heedless and headlong. There are things that people want, and under terms that suit them they have the means to fill their wants.—From an editorial in The Wall Street Journal, May 28, 1947.

There is currently a slowdown in construction activity. Needs and potential demands for construction continue very strong, the American economy is highly prosperous, and there is plenty of money available. In spite of these things, urgently needed projects are being deferred and postwar recovery interrupted. The trouble is easy to diagnose. Construction costs have risen to such heights that investors are refusing to buy. The slowdown is necessary in order to reestablish the normal peacetime buyers' market in construction and to pave the way for the eventual stabilization of the building industry.

Investors Turn Cautious

The most sensitive barometer of construction trends, namely, the movement of investments into construction as revealed by contract commitments, pointed to uncertain conditions as early as February, and indicated a decline in effective demand in March. Downward pressure was accelerated in April and continued through May. The value of contracts awarded in the first five months was 6 per cent below that of the corresponding five months of 1946 in the 37 states east of the Rocky Mountains.

Hopes that price and wage increases would be moderate after removal of controls were not realized. Some factors tending toward stabilization, notably increased production of materials and equipment, were at work during the first quarter, but they did not work fast enough. Consequently material prices and construction costs continued to rise at a rate that priced many projects out of the market.

It's Still a Big Market

The May 1947 contract total exceeded \$700,000,000, a very high figure in comparison with boom years. Total for the first five months of 1947 was the second

largest on record for a similar period. Total new floor space contracted for in the first five months of this year was 323,132,000 square feet, compared with 205,949,000 square feet in the first five months of 1939, 209,195,000 square feet in the first five months of 1940, 344,994,000 square feet in the first five months of 1941.

Commodity Prices

Lack of balance in the construction market reflects imbalance in commodity markets generally. It is a phase of postwar price inflation which is not only nation wide but world wide. To understand inflation in the construction market it is helpful to look at the broad picture of commodity prices. It is readily seen that two particular groups of commodities, farm products and foods, have risen at wholesale much more above prewar levels than have most other commodities. This is very important, since farm products and food count so much in living costs, which in turn affect wage scales in every other industry, including construction, and therefore influence all other prices.

There is another way to look at commodity prices. In Chart 3 it is seen that raw materials, including farm products, have risen considerably more than have semi-manufactured and manufactured goods. Since manufacturers generally have had large pay roll increases, as well as large raw material price increases, these figures indicate that most of them have already introduced processing economies to enable them to hold their prices to reasonable markups over prewar. In many lines the principal hope for early price reductions, if any, would be in raw materials.

Competition and buying pressure will be exerted more strongly on distributors and installers than on the producers. Distributors' profit margins are going to be squeezed. Since buyers are beginning to take over control of the construction market, and since they are determined to bring construction costs down, it appears that the sooner the necessary price cuts are made the quicker the current decline will be over. Wholesale and retail inventories are currently reported high in some material lines, a factor tending toward price reduction and involving the possibility of some business losses.

Depth and duration of the current construction movement will depend on the speed with which price and cost adjustments are made. There has been a wide variation in the rises of various materials, some

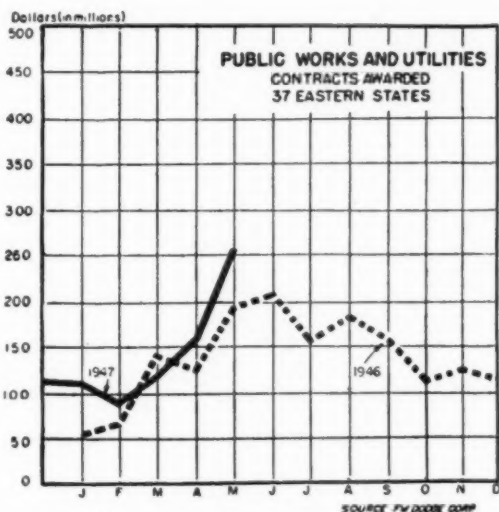
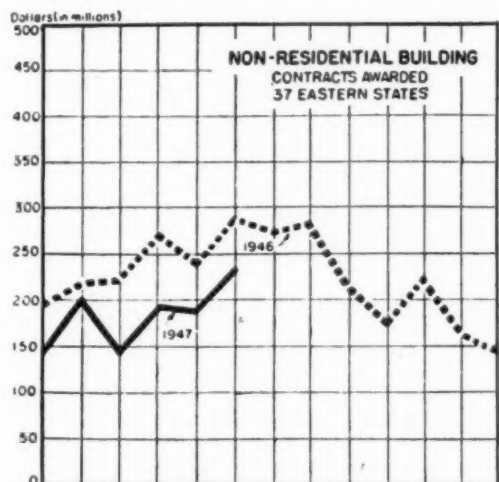
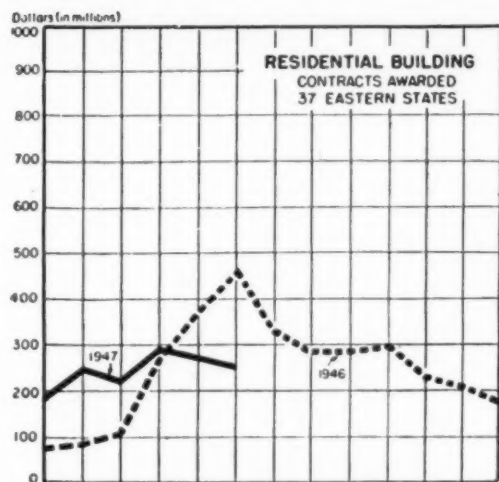


CHART 1. Residential contracts maintained an advantage in the first quarter, turned downward in April. Nonresidential investment commitments, dampened by federal restrictions not applicable in the first quarter of 1946, lagged behind. Engineering works were up in the first five months.

having been moderate, others fantastic when compared to prewar levels. Price adjustments in varying degree will have to be made by producers, wholesalers, retail dealers.

Building Material Prices

War and postwar price pressures have varied considerably with respect to building materials. The latest figures show the building materials group at a price level 96 per cent above the 1939 average, with variations from 23 per cent for cement to 189 per cent for lumber.

The market behavior of lumber has been similar to that of farm products. It is said that not a single producer controls more than 1 per cent of the country's total lumber output. Lumber prices in an open market respond sharply to changes in the demand-supply situation. There is apparently no way for any one in the lumber industry to adopt a particular policy and make it generally effective. Recent reports indicated a falling in the price for some grades.

A different situation has existed in paint and paint products. Linseed oil and other paint ingredients have been scarce and high priced in world markets. This is a case in which high prices for raw materials are the principal cause for high prices of the manufactured product.

Construction Costs

It is likely that the amount of deflation of building material prices and construction costs that must take place this time is considerably less than it was twenty-seven years ago. At that time construction costs rose to a peak about 150 per cent over World War I, dropped spectacularly about a hundred points and rose again to a stabilized level about 100 per cent over the prewar level of costs. This time the peak has not been nearly so high.

Construction cost index numbers shown in Chart 5 are in a sense theoretical. They take account of quoted material prices, official hourly wage scales and normal contractors' overhead and profit. They do not take into account excess costs incurred by unusual difficulties in the procurement of materials, frequent stops and starts on projects, abnormal overtime pay combined with bonuses, and the general low level of labor productivity. Such factors have added 15 to 25 per cent to the costs based on current material prices, current standard wage rates and normal overhead and profit. Some of these excess costs have already begun to disappear.

How Much General Price Adjustment?

Few people, if any, expect a return of prewar commodity prices, prewar wages, or prewar construction costs. Such a general deflation, if possible, would be disastrous to the whole economy.

Every great war of the past has put the economy on a price level higher than prewar. After World War I and after the drastic over-all price deflations of 1920 and 1921, the general price level came to be stabilized for a period of seven years at 45 to 50 per cent above the prewar (1913) average.

At present the cost-of-living index is 55 per cent over that of 1939. While prices of food and clothing may come down, rents will probably rise when controls

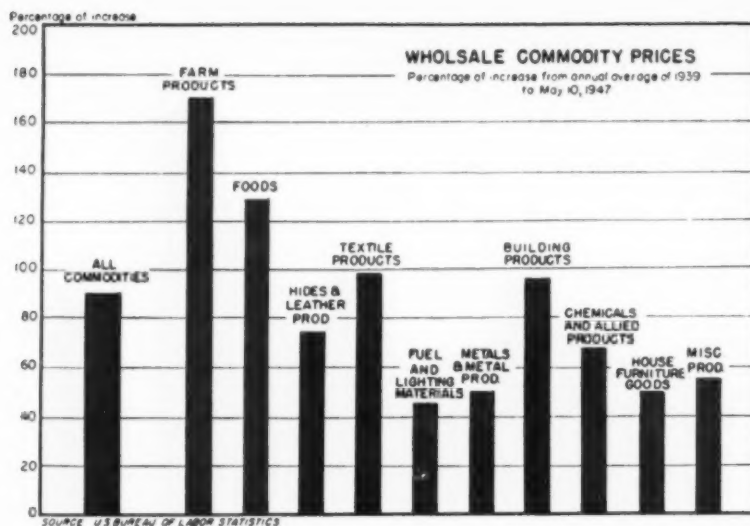


CHART 2. Wholesale price index for all commodities on May 10 showed a rise of 90 per cent over the average for the year 1939. Building materials were up 97 per cent, other commodities 76.

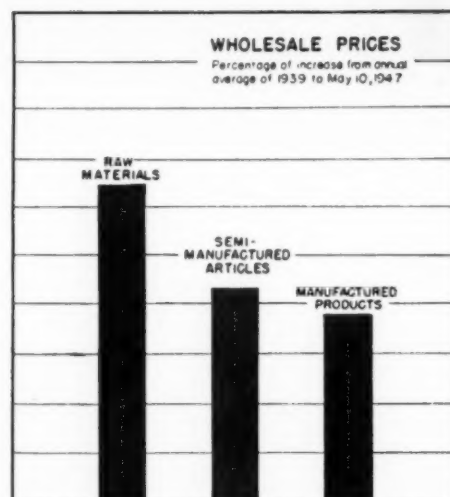


CHART 3. Manufactured products prices rose moderately since 1939 compared to raw materials, semimanufactured goods.

are ended. Therefore, it looks as if postwar living costs may stabilize in the range of 45 to 55 per cent over prewar.

These considerations suggest, but do not prove, that the postwar stabilized level of commodity prices at wholesale might average somewhere in the range of 45 to 55 per cent over the 1939 average. There isn't any way of calculating in advance exactly what the stabilized postwar price level will be.

Analysis leads to the following conclusions about general commodity price stabilization:

1. There is little likelihood of drastic price reductions across the board. Some out-of-line prices must come down considerably, some prices are likely to come down a little, some appear to be fair and reasonable today, a few may go up.

2. Even farm prices, basic to all others and very high at present, are not likely to drop suddenly or precipitously, because world food shortages are continuing. Furthermore, our government will support farm prices, according to the parity formula, when they tend to drop too fast.

3. It is reasonable to expect a satisfactory stabilization of general commodity prices without a prolonged business recession or a general upset of the economy.

How Far Should Building Costs Drop?

Lowered construction costs will result from the following factors:

1. Continued high production of materials and

(Continued on Page 152)

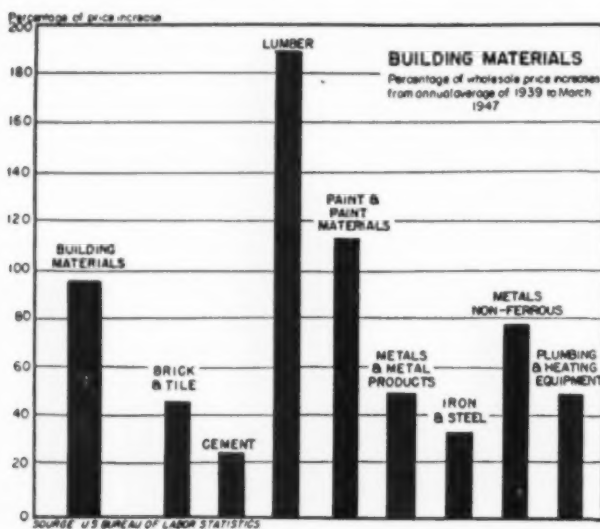


CHART 4. Spectacular price increases in lumber have contributed much to over-all price jump. Most building products show moderate gains compared to 1920-21.

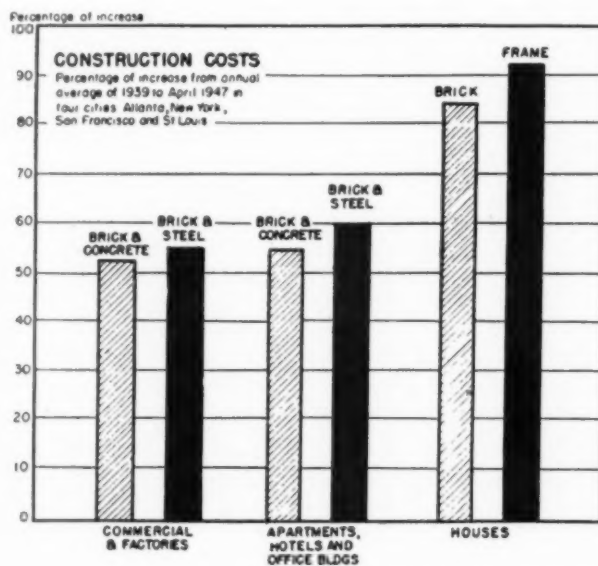
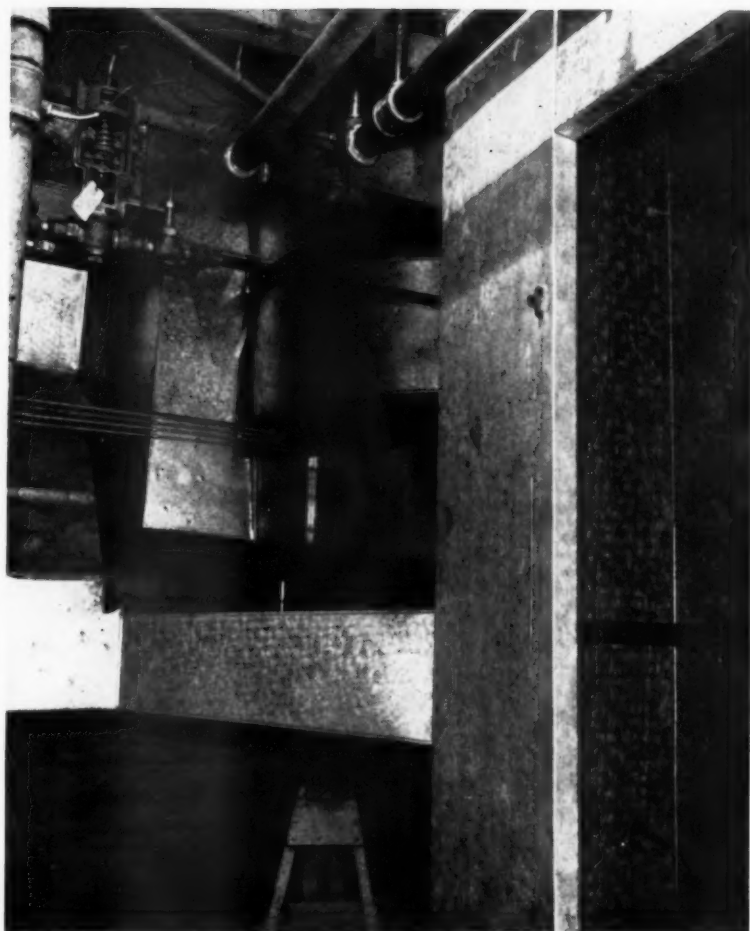


CHART 5. Because lumber and paint are used much more extensively in home building, residential costs thus reflect disparity with other types of construction.



RESIDENTIAL AIR CONDITIONING *Section*

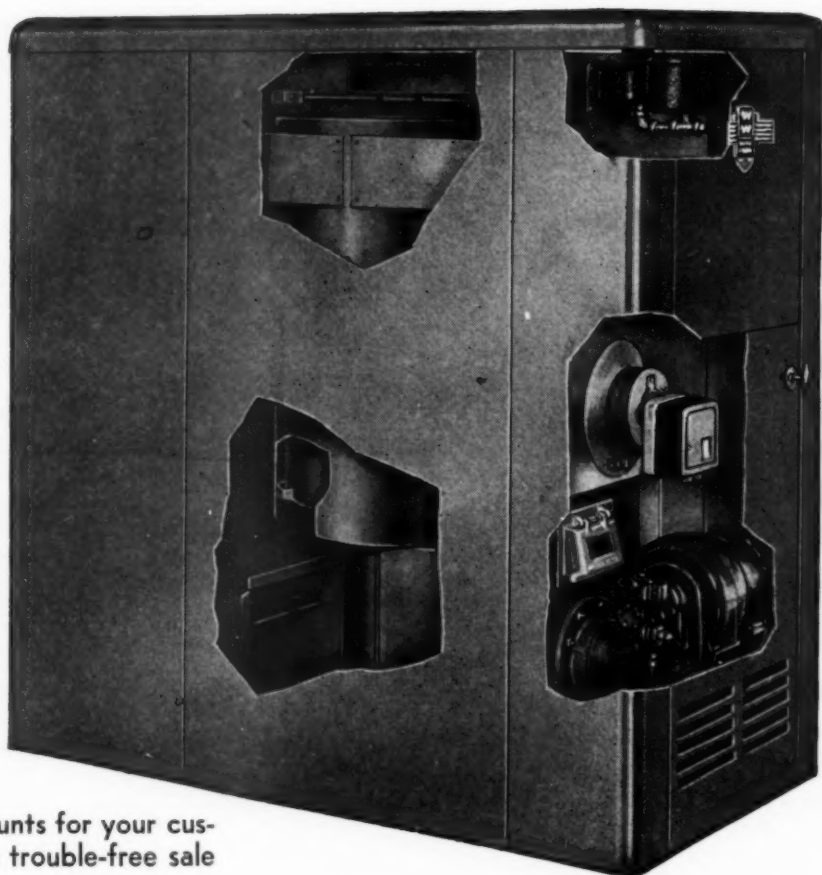
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1122 Jackson St. N. E., Minneapolis, Minn.

Time Lag in House Heat Gain or Loss May Permit Use of Under-Sized Cooling Units

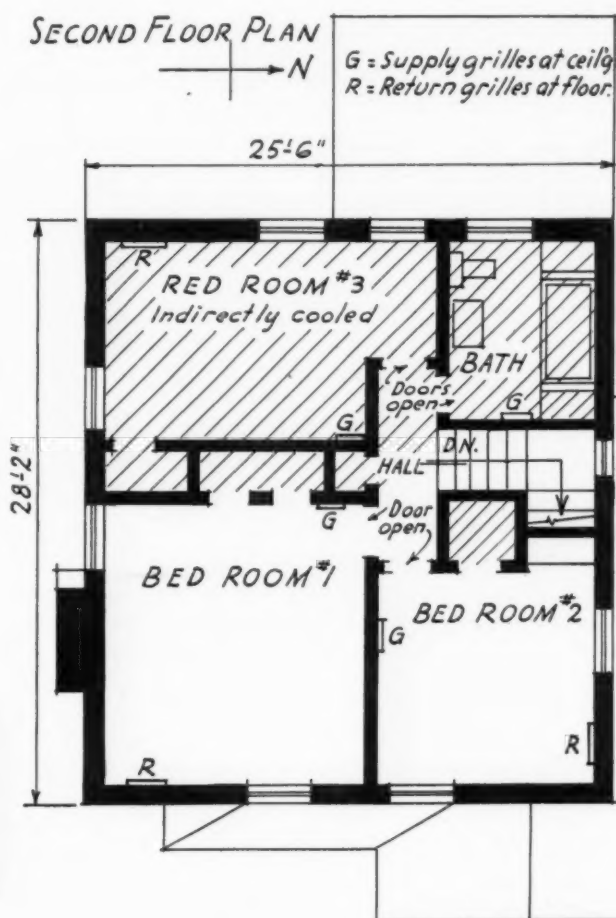
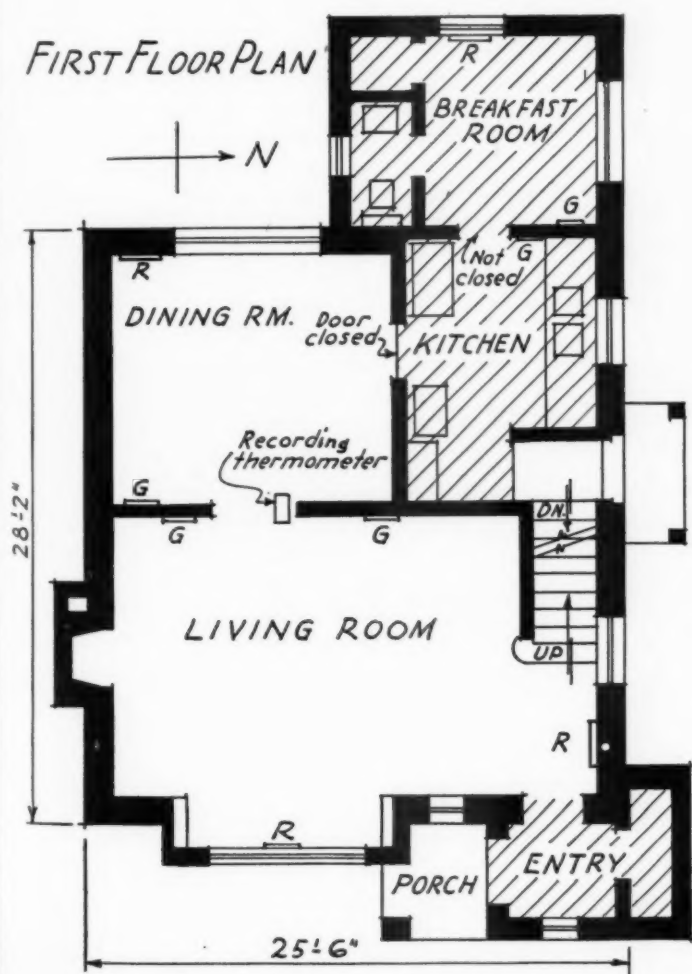
WHEN summer cooling first was offered to the public some years ago, the practice was to maintain a pre-selected inside temperature no matter how hot it got outdoors. In those first systems, 70 deg. was generally the indoor temperature selected and the first owners (usually theaters) went all out in their advertising of this 70 deg. inside temperature. It wasn't long, however, before patrons found the "shock" from 95 deg. or more outdoors to 70 deg. indoors was more than most people could stand, and so within a short time engineers changed their design basis in favor of a system which held the indoor temperature within a certain number of degrees of the outside temperature (usually about 10 deg.). In this design, as outdoor temperatures rose, the inside temperature followed and the "shock" was eliminated.

A few years later, when cooling really got started

in residences, this practice of maintaining an outside-inside temperature difference ratio was well established and generally was applied to the design and selection of equipment capacity in houses. In the design, then, the engineer usually selected the maximum summer temperature for the locality (or some temperature frequently reached in the area) and he sized his cooling equipment to maintain an indoor temperature about 10 deg. under this outdoor maximum.

So far as operation was concerned, this practice provided a cooling system which was eminently satisfactory to the owner. But it also required quite an investment—so much so that cooling in homes was pretty much restricted to high income owners.

About this time certain observing engineers realized that the construction of the house exerted a tremendous effect on the operating characteristics of the system. Out of this observation came studies on the



Plans of first and second floors show areas not cooled (shaded) and locations of supply registers and return grilles in the rooms cooled. The operating procedure for doors is indicated.

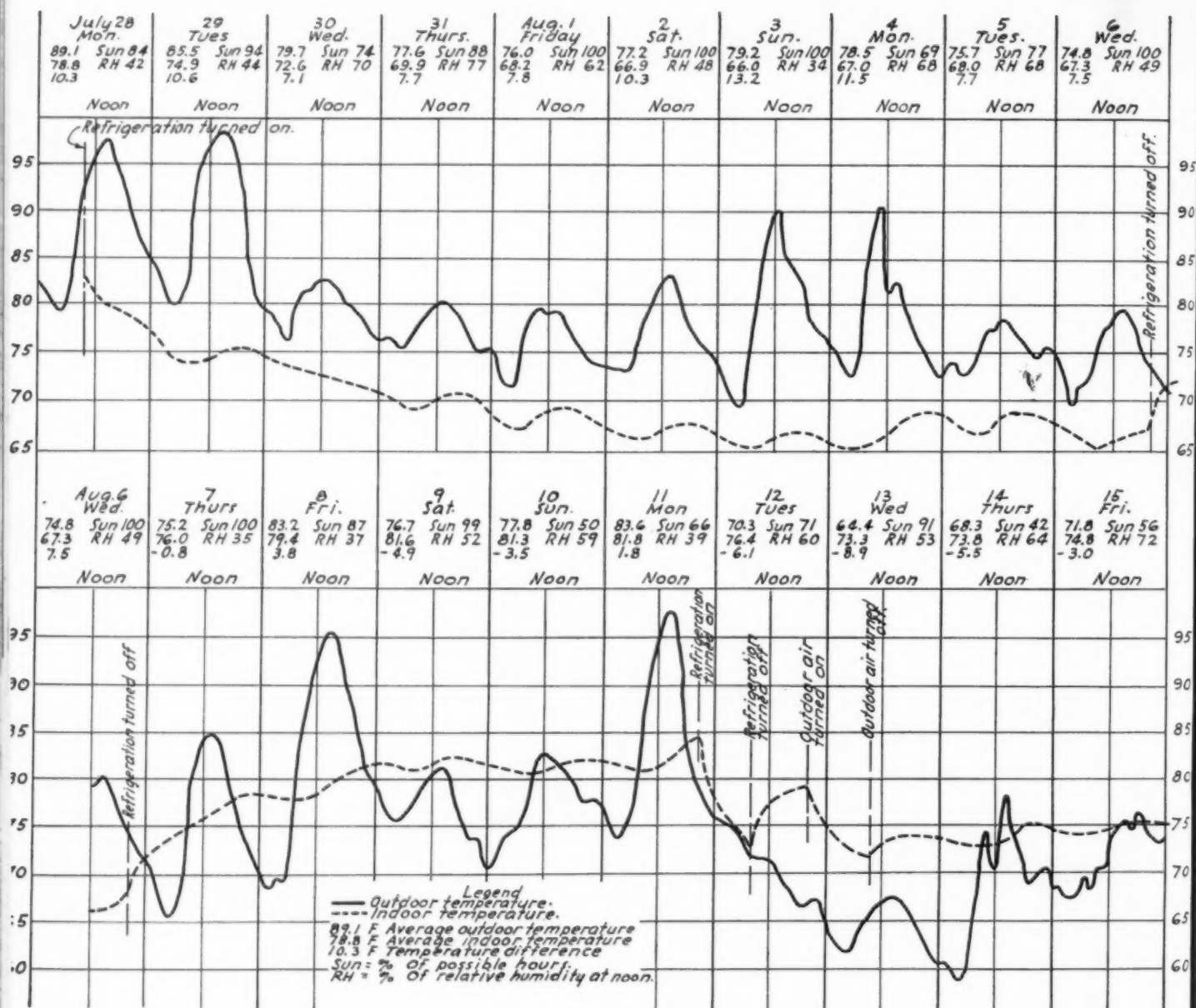


Chart 1—In the top graph the under-sized cooling unit was operated continuously from July 28 to Aug. 6 and maintained an inside temperature comfortably below outdoor temperatures. From Aug. 7 to 15 the unit was operated intermittently, as indicated, with less favorable results.

effect of "time lag." Very briefly, "time lag" makes itself felt in this manner: In a heavy masonry house with wall or ceiling insulation, the indoor temperature reaches its peak, not simultaneously with the peak in outdoor temperature, but several hours later. In a light frame house, with no insulation, the difference in peak hours is less. Also affecting this lag are such things as shade from the sun, exposure direction, and so many other factors that engineers find exact calculations practically impossible.

In some heavy masonry and insulated houses the "time lag" may be of such long duration that the outdoor temperature has fallen to cool evening temperatures when the indoor temperature reaches its maximum.

Out of these observations came the idea that perhaps cooling equipment definitely under capacity ac-

cording to the indoor-outdoor temperature ratio could, if operated continuously, maintain a satisfactory indoor condition even if the equipment could not hold a temperature ratio when operated only after indoor temperature reached a pre-selected temperature—the effect of time lag would be to assist the cooling system.

With this background in mind, a series of tests were undertaken in the home of G. D. Wetherbee, Refrigerating Engineer, Commonwealth Edison Co., Chicago, to study the effects of "holdover" in a residential dwelling and the results are graphically illustrated on Chart 1. The data are not regarded as conclusive in any sense, but are offered as a matter of record.

The original idea was to operate the refrigerating equipment continuously during a hot spell to obtain the average temperature reduction and then to shut the equipment down to see how much warmer than out-

doors the house would get. On two nights, however, the conditions were so unbearable that it was necessary to operate the cooling system in order to stay in the house. Although this procedure made the second part of the plan inconclusive, it did furnish data which emphasize the effects of "holdover" and provide a graphic explanation of the complaint that "I can't get it as cool as it is outdoors."

The conditions of the test were that the premises were unoccupied except for a housekeeper who lived in a basement bedroom and by the testing engineer only two or three nights a week. The family was not at home. Therefore, the occupancy and electric loads were negligible. All the air was recirculated and the only ventilation was normal infiltration and leakage past the closed dampers to the uncooled spaces. The living room, dining room and two bedrooms were directly cooled. The other bedroom and bathroom were indirectly cooled through open doors. The kitchen, breakfast room and basement bedroom were not cooled.

Operating Procedure

The condensing unit was set for continuous operation and did not stop for nearly ten days (Chart 1, July 28-Aug. 6). It was driven by a 1½ hp. motor with Freon 12 as a refrigerant. Gage pressures were not recorded, but were in the neighborhood of 30 psi. toward the start of the test and 25 psi. near the end. A reasonably accurate refrigerating capacity was obtained by measuring the heat of the condenser water and subtracting 70 per cent of the heat equivalent of the electricity used by the motor. A figure of about 18,000 Btu. per hour was the result, which compared favorably with the manufacturer's data.

The blower operated continuously and circulated about 750 cfm. through five discharge grilles with a face velocity between 350 and 450 fpm. For heating, about 1000 cfm. is discharged through ten grilles. The difference in air delivery between heating and cooling is probably due entirely to the added resistance set up by closing dampers to rooms not cooled.



The conditioning apparatus—boiler at right; cooling unit at ceiling; blower and heat transfer section for winter air conditioning at left.

DIMENSIONAL DATA OF EXPERIMENTAL RESIDENCE

(Areas are sq. ft.)

	Floor Area	Window Area	Registers
<i>Directly Cooled</i>			
Dining Room	162	37 west	1
Living Room	329	36 west	2
		15 north	
Bedroom No. 1	166	15 east	1
		15 south	
Bedroom No. 2	107	15 east	1
		15 north	
Upstairs Hall	52	8 north	0
	816	156	5
<i>Indirectly Cooled</i>			
Bedroom No. 3	140	26 west	1*
		15 south	
Bathroom	54	9 west	1*
Four closets	38	0	0
	232	50	—
<i>Uncooled</i>			
Kitchen	100	9 north	1*
Breakfast room, etc.	93	15 west	1*
		22 north	
	193	46	—
TOTALS**	1,241	252	9

For net volume, multiply by 8½ ft. ceiling height.

Air supply registers all 9½" x 5" at ceiling.

Air return registers all 13½" x 3" at floor.

*Registers and dampers closed.

**Basement and basement bedroom (with one supply grille) are not included above.

The indoor temperatures shown on Chart 1 were taken by a recording thermometer placed on a chair in the opening between the living room and the dining room. Several spot checks at various points in these two rooms showed temperatures which corresponded very closely. In the upstairs bedrooms the evening temperatures were from 1 to 3 degrees higher and the early morning temperatures were from 1 to 2 degrees cooler. The doors to the third bedroom and the bath and the dampers in their supply ducts were closed. These two rooms were several degrees warmer than the other rooms, the condition being aggravated by their west exposures.

Outdoor temperatures were taken from official Weather Bureau records.

House Construction

The construction of the residence is 12 inch brick on the first floor and 8 inch brick on the second floor. Nominal 2 inch wood furring strips are attached to the brick walls and this space is filled with "Spray-O-Flake," which is ground newspaper mixed with hot asphalt and applied with a "gun." The result is an insulation of about 8 pounds per cubic foot density, which completely fills all cracks and crevices and has a resultant thickness which averages about 1¾ inch. Then comes the plaster base consisting of insulating board ½ inch thick, onto which ordinary plaster is applied. The second floor ceiling (the attic floor) is insulated with rock-wool batts 4 inches thick. During the test, the cream colored venetian blinds were closed just enough to exclude direct sunlight. The residence is almost 100 per cent shaded from the south by a two-story apartment building.

Cooling Calculations

Several attempts to calculate the cooling load were made, but the results were dependent upon so many variables that they will not be given here. To get an idea of the cooling load involved, the winter heat loss figures 68,000 Btu. per hour by one method and 62,000 Btu. per hour by another, both from plus 65° F. of the degree-day method to minus 10° F. During a 6,500 degree day heating season, 1,600 gallons of oil are burned, which is equivalent to 2,250 therms per year. This latter figure is from actual experience covering 10 years.

Although the condition of the test was minimum occupancy, actual experience for ten summers has shown that with a normal occupancy of four persons and with the thermostat set as low as 72° F., the condensing unit cycles regularly even on the hottest days. Of course, if the house is allowed to become hot, it *does* take a long time for the initial pull-down.

Summary of Results

An attempt to summarize the results of the test follows:

1. While it was getting cooler from July 29 to August 1, inclusive, the house averaged 8.3° cooler than outdoors. Yet the house was 75° F. when outdoors was 98° F. at one time.

2. Again, when it was getting cooler outdoors from Aug. 4 to 6, the house averaged 8.9° cooler than outdoors. Yet the house was 65° F. when outdoors was 91° F. at one time (Aug. 4).

3. While it was getting warmer outdoors from Aug. 1 to 4, inclusive, the house averaged 10.7° F. cooler than outdoors. This 10.7° F. figure, being higher than the 8.3° F. and 8.9° F. figures above, appears to be the result of heat capacity of the building.

4. During the entire period while the refrigerating equipment was operating from July 29 to Aug. 6, inclusive, the house averaged 9.3° F. cooler than out-

doors. This is evidently the actual "TD" which should be used in a "heat gain" calculation for continuous operation.

5. From Aug. 7 to 15, inclusive, with the cooling system shut off most of the time, the temperature of the house averaged 3° F. above outdoors in spite of the 11 hour and 13 hour periods of cooling. Without this cooling, the house probably would have averaged about 5° F. warmer than outdoors.

6. The time required to reduce the temperature of the house 5° F. from its initial temperature was 12 hours; 10° F. was 46 hours; 15° F. was 88 hours; 18° F. was 140 hours. These figures are an indication of why larger equipment might be preferred, but they also show that the extra expense is not necessary if rapid pull-down is *not* demanded.

Conclusions

One conclusion to be drawn from this test is that residual heat or "holdover" effect plays a very important part in residential summer air conditioning and that this phase is more important than outdoor temperatures or temperature differences. In fact, a figure to be used as a temperature difference factor does not seem to exist.

For use in places where the heating season is in the neighborhood of 6,500 degree days, the use of a summer cooling system with a capacity of 25 to 30 per cent of the winter heat loss might be a good rule. An even better rule might be a cooling system with a capacity in Btu. per hour equal to 8 times the number of therms of oil or gas burned during the year.

Naturally, these rules would not apply in other climates than Chicago, but comparable relationships could be established. Neither would they apply where rapid accelerative effects ("pull-down") were desired. By practicing the simple expedient of cycling the equipment continuously on the thermostat during the summer regardless of the weather and by never allowing the residence to become too warm, however, the necessity for a large investment seems unwarranted.

Automatic Selling Expands

VENDING machines are winning more and more consumer acceptance and are due to take a growing share of the consumer's dollar. In many lines, they actively compete with retailing.

Vending machine merchandisers estimate that their present \$500 million business will increase sixfold in 10 years. Here are some reasons which point the direction of the most likely future growth of automatic vending.

Brand names have come through the war with flying colors and are winning even stronger consumer backing. Well-accepted brand name products are a natural for vending machines.

Self-service retailing has been growing fast, is now said to be preferred by many women, especially in the food field.

Impulse buying has been proved by tests to account

for a large percentage of total retail sales.

Consumer acceptance of automatic selling was given a real boost during the war. For instance, many workers in war plants came in contact with vending machines for the first time—and liked them.

Design improvements are fast overcoming prewar handicaps. New models can sell canned, frozen and dehydrated foods, hosiery, books, toilet articles, shirts and neckties—to say nothing of ice cream, hot dogs and complete pre-cooked dinners.

Greater ease of coin changing will also stimulate automatic merchandising. It's estimated that one out of every five sales are lost for lack of proper change. Now, six models of coin changers are reported on the market—and at least one of these can be readily attached to existing machines. One model can return pennies as well as other change.



Gas Heats Dallas' Wynnewood Homes

DESIGN of the first group of homes under construction in Dallas' \$25,000,000 Wynnewood Addition emphasizes central heating through the central location of utility or furnace rooms to provide efficient installation with a minimum of cost.

Approximately 50 per cent of the initial contract of 240 homes will be equipped with central heating, according to present plans. All of these homes are in the \$10,000 price category. Another 425 homes under way in the \$6,500-\$8,500 price range will have regular gas stove provisions.

Wynnewood, when completed, will boast 2,200 homes, 1,000 apartment units, and a 20-acre shopping center—all combined to give Dallas its largest, and one of its finest, residential developments. Scheduled as a five-year building program, it will cost an estimated \$25,000,000 and house 10,000 people. Owned and developed by the American Home Realty Company, headed by Angus G. Wynne, Jr., president, it is regarded as the nation's largest integrated residential development.

Heating and air conditioning of the Wynnewood homes is under the direction of the Air Conditioning Engineering Corporation of Fort Worth, headed by Hubert L. Jones.

Climatrol gas-fired winter air conditioners, manufactured by the L. J. Mueller Furnace Company of Milwaukee, will be used throughout in central heating installations. The furnaces have a capacity of 100,000 B.T.U. per hour and are designed to heat the homes to 70 degrees when the outside temperature is zero or above.

For comfort cooling, attic fans with a capacity of 8,000 cubic feet of air per minute are provided. The electric-motor driven installations, placed in central hall ceilings, are products of the American Coolair

Corporation of Jacksonville, Fla., and are installed by the Air Conditioning Engineering Corporation of Fort Worth. They are regarded as ideal for removing heat stored in attics by the rays of the hot Texas sun beating on the roof.

All Wynnewood homes are designed for complete concrete slab foundations, thus expediting construction as well as providing two basic advantages in the fact that the elimination of wood joists reduces termite

(Continued on Page 158)



Climatrol Utility Room Unit described in text.

Correct Practice In Oil Heating

Part VII { Procedure for building a Combustion Chamber —Data on Prefabricated Chambers—Method for supplying combustion air to furnace. }

By J. J. Mirabile

Vice President of Engineering—Harold E. Sweeney Corp., Philadelphia

THERE are two methods to be followed in building a chamber. (1) a prefabricated chamber, can be purchased, or (2) one can be built with insulating refractory fire brick. Some old timers still take pride in the efficient chambers they build, which they like to discuss when oil burner men get together. Both types shall be described with the material required.

The Prefabricated Chamber:

There are numerous types of chambers on the market. Some are made in three or four pieces, etc., and some are made of numerous vertical segments (Fig. 1). This type of chamber is used by many oil burner men because it is very flexible, since it is made out of dense and also out of insulating brick materials. The chamber can be built to follow any desired contour. It is necessary only to stock the segments and front section. Select the number of segments required to build the chamber. These segments will give a chamber very near the desired shape and size required. Also remember to select a chamber that will operate at 2000° to 2300°, combustion chamber temperature. This is disputed by some chamber manufacturers because certain very light combustion chambers which heat up very rapidly have a 2000° temperature limit. These chambers are satisfactory, providing they are not overfired and the flame does not strike any portion of the chamber. If overfired they will break down and a new chamber must be built. If the nozzle is dirty and the flame shoots to one side, the flame will break down that side of the chamber. In fact some chambers have disintegrated and been removed with a vacuum cleaner. (This is expensive vacuum cleaning).

Steel chambers are also available. They heat up rapidly, and have a lot of good points. However, don't overfire them or have the flame impinge on their surface because they also will break down. The chamber of the future may be made of metal. A great deal of research has gone into the steel combustion chamber and in the near future there may be more activity in this type of chamber.

The Brick Chamber:

Years ago 2800° fire brick were used to build combustion chambers. They were heavy and very slow heating. Present day thermostats which give more frequent and shorter burner operating periods neces-

sitated a fast heating refractory chamber. The need for a lighter and faster heating chamber was met by refractory manufacturers when insulating fire brick was put on the market. They are light in weight, heat up quickly and do not absorb heat like heavy fire brick. The bricks are cut to fit any required shape by the combustion chamber man by means of a hand saw. They are made for temperatures of 2000°, 2300° and 2600° F. This type chamber gets hot very quickly and retards the sooting action prevalent with the heavy refractory material during the warming up periods. They reflect heat into the flame and assist materially in sustaining good high flame temperature in the combustion zone. The preferred insulating brick is kiln dried to make it more durable.

Refractory Cement:

Do not use fire clays because they usually do not hold up. Use a ready mixed high temperature refractory cement. The refractory cement designed for



Fig. 1. The photo shows one type of prefabricated combustion chamber that is on the market.

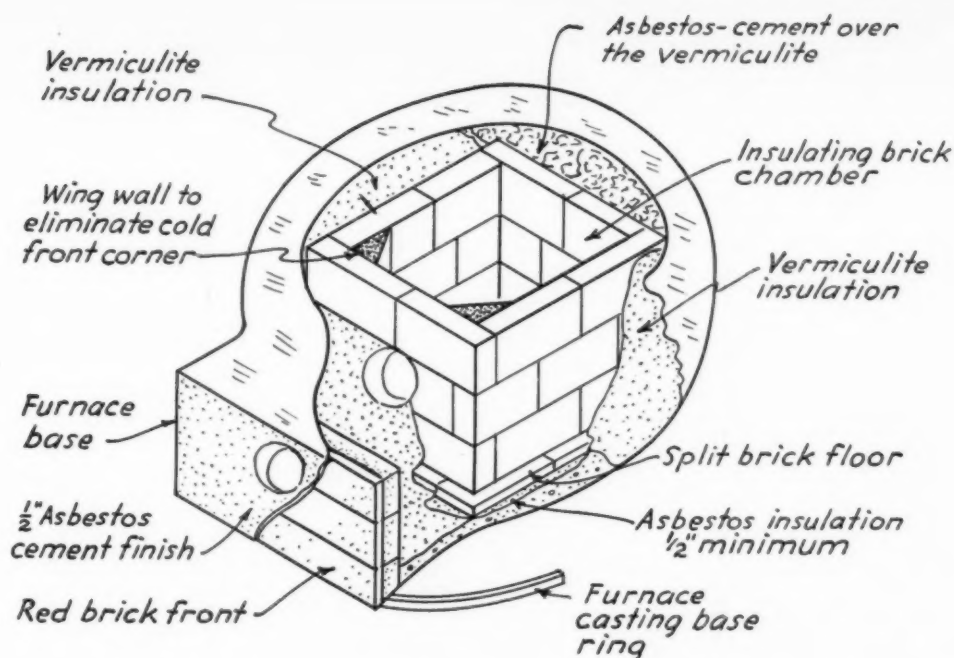


Fig. 2. This drawing gives a clear picture of the position of the combustion chamber in the furnace installation and should make it easy to follow the procedure of construction that is outlined in the text.

heavy bricks is not suitable for insulating bricks because the insulating bricks absorb water readily. When the insulating brick is buttered put it in place immediately or the water in the cement will be absorbed by the brick.

Insulation:

Vermiculite is the most popular inexpensive form of insulation. It is a form of expanded mica, light in weight and has a high insulating value. The vermiculite will pour readily and it can be used without much trouble.

There are also combustion chamber mixes on the market which, after the addition of water, are poured in the space between the ashpit and the chamber walls.

Do not use sand or ashes, etc. to insulate the chamber.

The floor of the ashpit can be covered with $\frac{1}{2}$ " of asbestos millboard or dry asbestos. Either of these forms a base for the chamber floor and levels off any surface irregularities in the ashpit floor. The front of the ashpit is closed with a red brick wall and coated with a coating of asbestos cement with a small portion of Portland Cement mixed in to minimize shrinkage. Chamber men usually add about 2 cupped handfuls of Portland Cement to a 10 quart bucket of asbestos. This is mixed dry with the asbestos. Water is added after the Portland cement has been mixed thoroughly with the asbestos.

This mixture is also used to "cap" the vermiculite insulation. *This is important.* If the vermiculite is not capped, the furnace cannot be properly cleaned later with a vacuum cleaner without the cleaner picking up the vermiculite. The asbestos "capping" also helps seal the outside of the chamber from possible air leakage entering around the air tube, etc. and rising up between the chamber wall and ashpit.

Procedure in Building the Chamber:

1. Clean the furnace, ashpit, smoke pipe and base of chimney and install draft regulator.

There are numerous draft regulators on the market. Select a good draft governor, one that will work for years without binding, etc. This is one item that makes for economy and it should not be considered an expense but an investment in fuel savings and continued customer satisfaction.

2. Remove grates and ashpit door and damper in smoke head or smoke pipe. Check for cracks in the castings of a cast iron furnace. All joints formed by the castings must be air tight. (If in doubt, smoke test or completely reseal furnace).

When converting a hand-fired steel furnace to oil-fired, it is important that the fire brick lining which protects the steel and forms the fire pot of the furnace be removed before building the combustion chamber. In some furnaces it is also possible to remove the ring which supports the fire brick lining, thereby increasing the space available at the grate line.

The reason for removing the fire brick lining is to prevent the "fly-wheel effect," or overheating which would be caused by the heat's being released by the brick through the furnace to the air stream after the thermostat has been satisfied. In other words, if close temperature regulation is desired, the removal of the fire brick lining will prevent any heat being stored up in the brick to be released after the burner stops. It will also permit quicker heat transfer through the furnace walls to the air stream, increase the furnace volume and expose more heating surface to the flame's radiant heat.

3. Lay 1" of asbestos (dry) over the ashpit floor. Some installers use $\frac{1}{2}$ " asbestos millboard. The millboard is cut into two or three pieces so it can be pushed

[In the previous article of this series in the April Artisan an error was made in the drawing on page 71. In the top view "A," the "throat" of the combustion chamber was labeled "front wall."]

through the ashpit opening.

4. Over the insulation lay the floor using 2½" brick. If the nozzle distance is less than that specified in Col. 8 Chart No. 1, (Page 72, April AA), use split brick to form the chamber floor. Do not cement the floor brick or jam them in place. Leave space for expansion. If you use asbestos, level the floor with a board laid over the brick floor and tamp board with a hammer.

5. Locate with a plumb bob and mark the location of the grate lug projections on the floor of the chamber. This will give the dimension available at the grate line.

6. Mark the shape of the chamber on the floor taking the grate lug location into consideration and start building the rear wall first. Work through the ashpit door opening; continuing towards the front of the chamber.

7. After building the chamber lay one row of red bricks across the front of the ashpit opening. Build the red brick wall approximately ¾" behind the face of the ashpit opening.

8. Set the burner. Follow Manufacturer's recommendations or use the nozzle height given in Chart No. 1, Col. No. 8. Pitch the burner air tube slightly down towards the combustion chamber. This is to prevent any possible nozzle oil drip etc. from running back toward the burner fan. The burner motor must be level. If the motor is not level it may "purr" because the shaft in the motor may "run" to the low end of the motor away from the armature's magnetic center and back to its magnetic center again causing the "purr."

9. Finish building the chamber and install the wing walls to eliminate the cold corners in the front of the chamber, this also increases the radiant heat which helps to roast the oil into a gas, then cement around the air tube.

10. Cut a piece of cardboard large enough to cover the top of the combustion chamber. Do not cover the space between the chamber and furnace casting.

11. Pour the vermiculite over the cardboard and fill the back first. When the space in between the ashpit and the chamber wall is filled, you will notice that the vermiculite will pour forward against the one row of red brick.

12. Finish the red brick front wall and coat it with a mixture of Portland and Asbestos cement. The red brick must not contact the burner air tube, you may wrap asbestos rope around the air tube to minimize the possibility of noise.

13. Pour vermiculite between the red brick wall and the chamber.

14. Build the overhang. Remember not to use the overhang if it directs the gases directly to the flue opening which carries the products of combustion out of the fire pot.

15. Remove the excess vermiculite on the cardboard and remove the cardboard. Check into the chamber to see if any vermiculite leaked in under the cardboard. Remove this if any.

16. Cover the top of the vermiculite with a coating of the asbestos and portland cement. Insulate the fire
(Continued on Page 158)

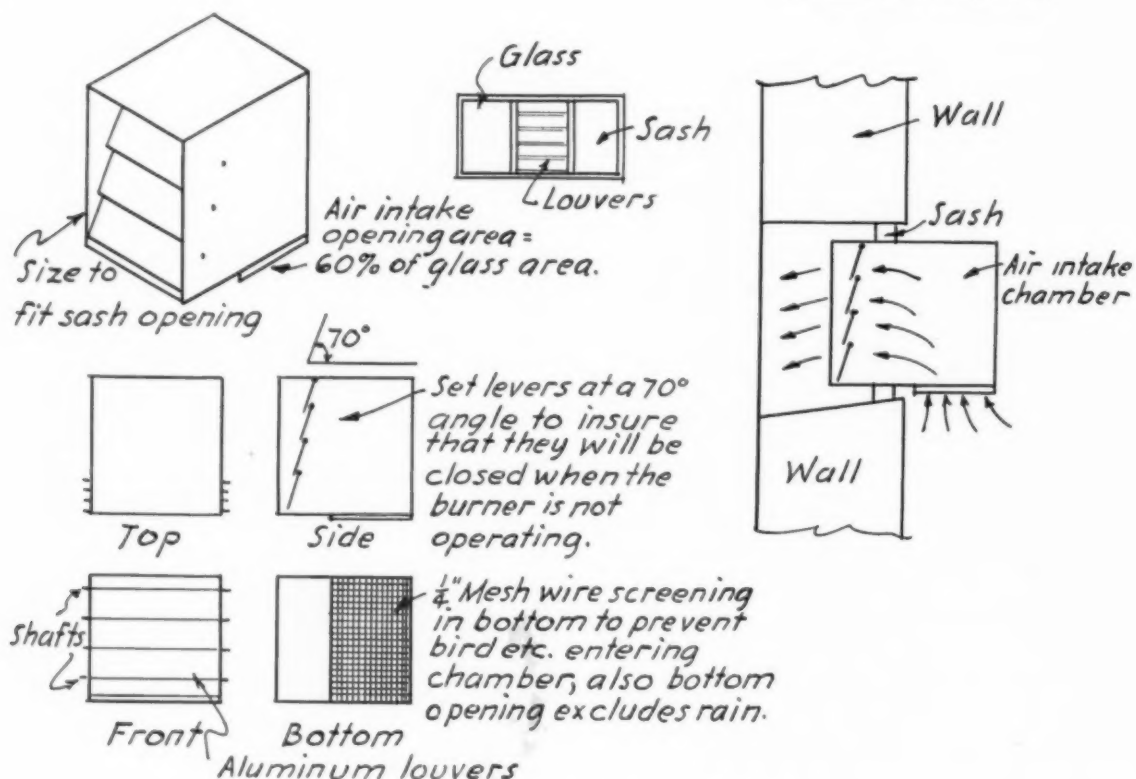


Fig. 3. These drawings show the ventilating louver the author describes.

Warm Air Ceiling Panel (Closed System)

This warm air ceiling panel is in a suite of offices having a concrete floor which was not insulated in any manner. The occupants are men and women, the men having rugs on their floors; the women working on bare concrete. A higher-than-usual thermostat setting created higher-than-normal room air temperatures, but the comfort is declared satisfactory in spite of cold concrete next to outside walls.

AMONG the warm air panel installations covered in the series of tests reported in AA, was a ceiling panel in a new office annex of the Majestic Furnace Company in Huntington, Indiana.

Description of Installation

When the Majestic company decided to enlarge its office space, an area to the rear of the existing offices was selected—most of the area had been occupied by a garage which had a crushed stone floor. A suitable foundation was erected of concrete and on this foundation an arrangement of rooms as shown in the floor plan was constructed. The floor of the office to be level with the existing floor was approximately one foot above the top of the old garage crushed stone floor. This space was filled in with earth, cinders, slag, and sand to approximately 5 inches below the finished floor and on this fill a concrete floor varying in thickness from 4 to 6 inches was poured.

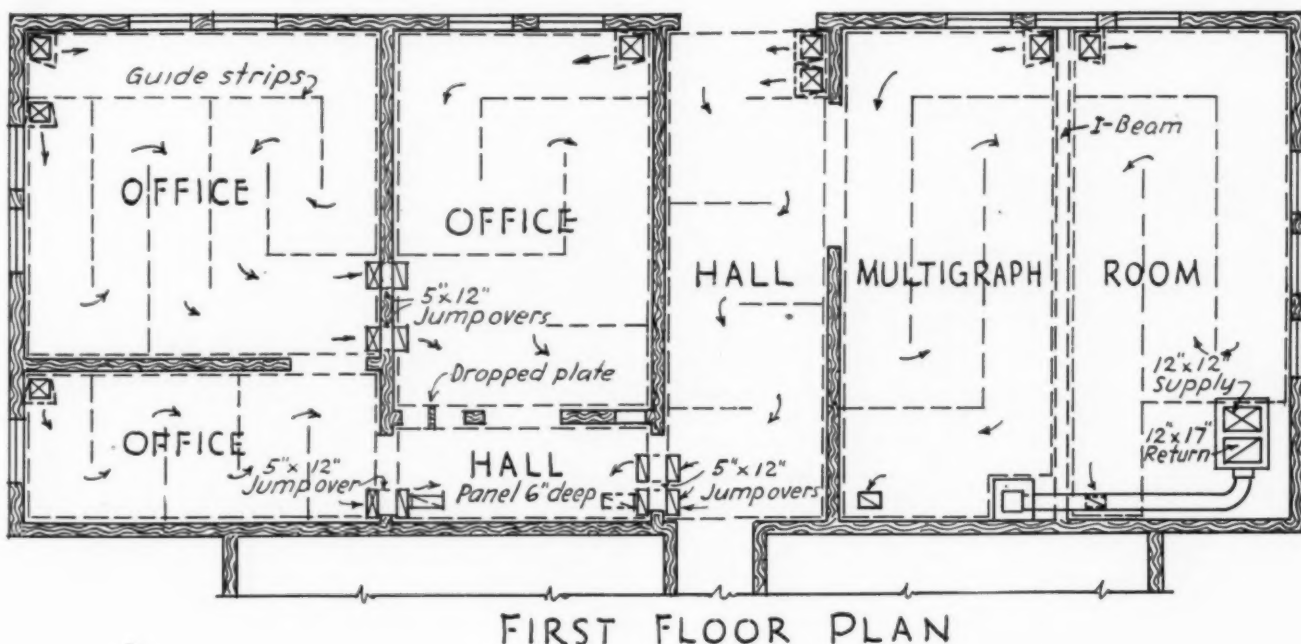
The exterior walls of the new rooms were built of siding on insulating board; 2 by 4 studs with the space filled with Vermiculite; plaster board and two coat plaster. The windows are double hung and at the time of the test were tight, but without storm sash.

The outside edge of the concrete slab was not insulated from the foundation.

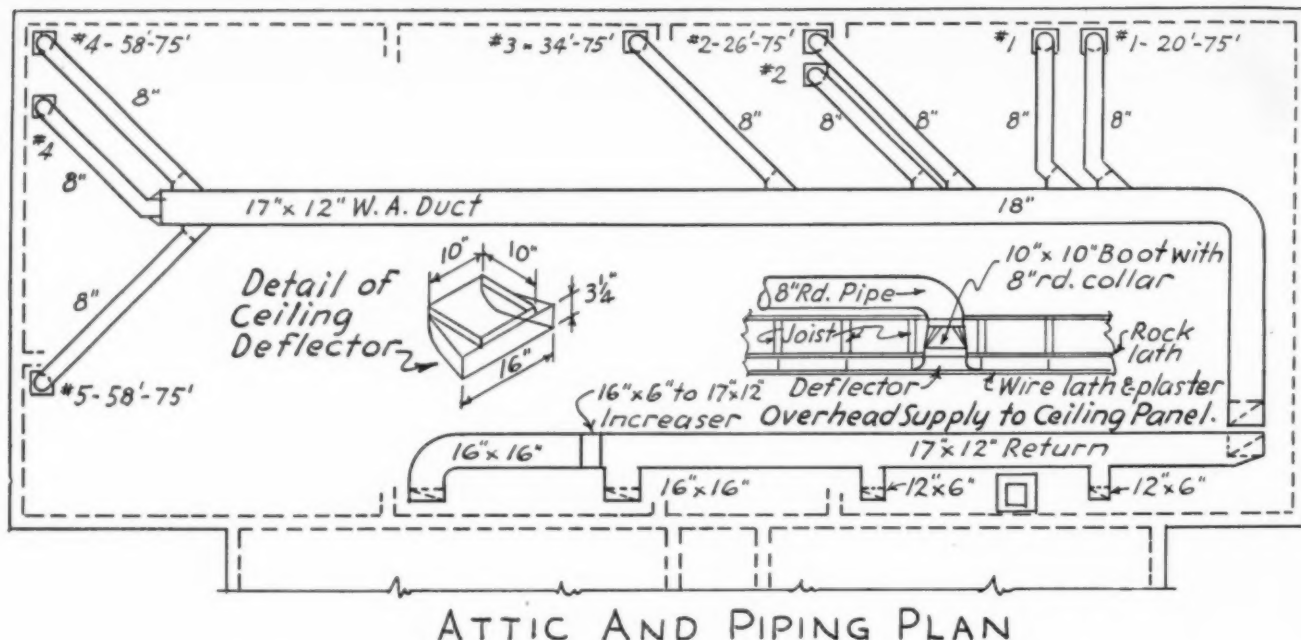
The ceiling, above the panel, consists of rock lath nailed to 2 by 8-inch joists with $3\frac{1}{2}$ inches of Rock Wool insulation applied over the entire ceiling between joists. The space above the insulation is a low attic. From this ceiling, and supported by hangers, the panel was constructed of expanded metal lath and three coats of smooth finished plaster to form a panel 4 inches deep.

Design of Panel

The system was engineered according to the "Panaire" design of the International Heater Company.



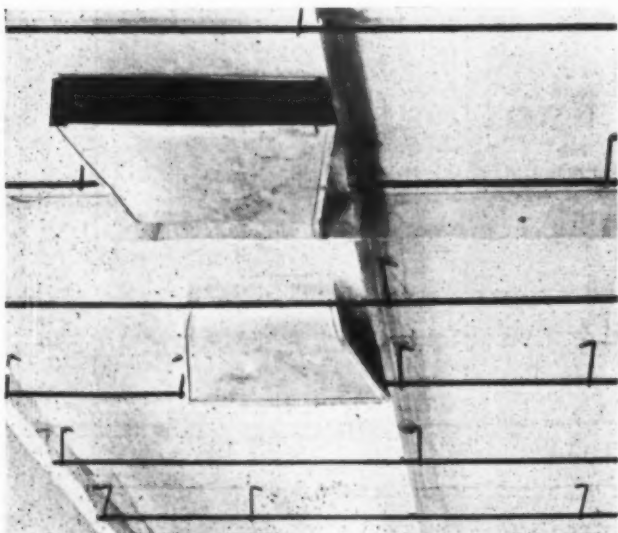
Layout of rooms. The private offices have rugs; the multigraph room is bare concrete. The guide strips of the ceiling panels, also air supplies and outlets are indicated by dotted lines and arrows. The small hall in the lower center is the return gathering plenum.



The supply and return piping is in the attic. The numerals at the ends of branches indicate actual feet of length (first figure) and equivalent length in feet (second figure)

As shown on the floor plan, each room ceiling was made into a heating panel with a supply and a return as shown. The air entering supplies were placed, so far as possible, in outside corners of each room and panel and by arrangement of the partitions in the panel the incoming air was made to flow first along cold outside walls and then back and forth toward the small hall which acts as a collecting plenum. The partitions are shown on the floor plan.

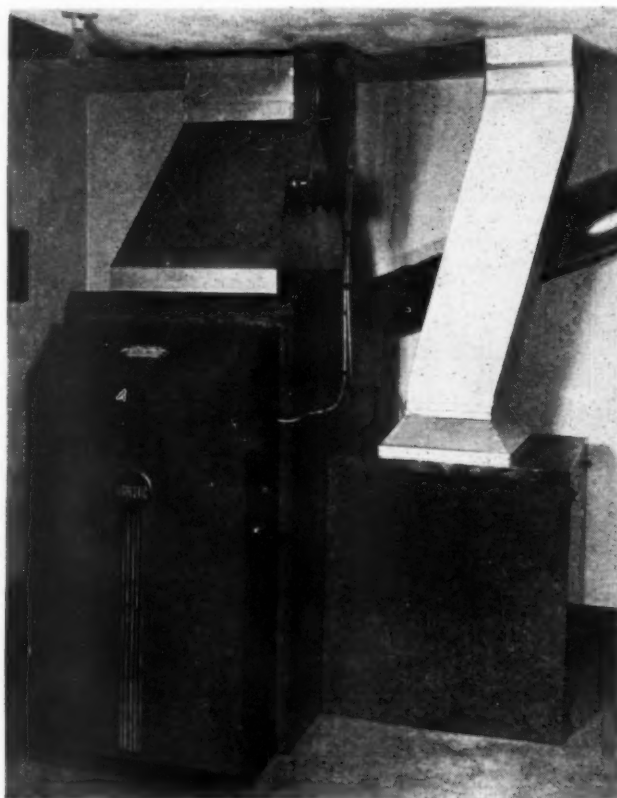
To get the air to the panels and back to the furnace, a duct system as shown on the piping plan passes through the attic space. The system is a combination of rectangular and round pipe using the special fittings shown in the details to "spread" the air as it enters the plenums.



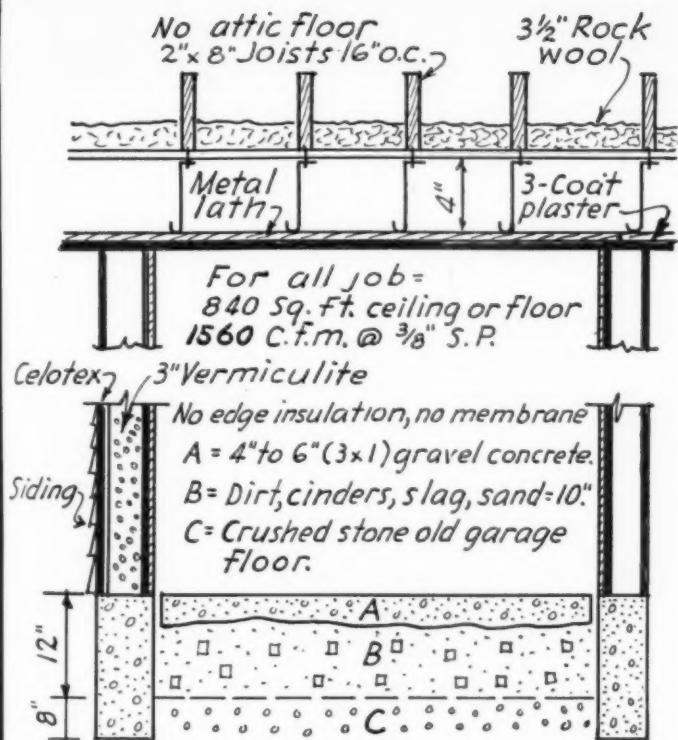
Ceiling panel construction showing hangers to support the lower ceiling surface and supply deflectors from the attic piping

Equipment

The furnace is an oil-fired, winter air conditioner rated 95,000 Btu per hour, with a side attached blower of 1600 cfm delivery. The burner nozzle is 1.00 gal. Since adequate air delivery has been found to be one



The oil-fired furnace has a rating of 95,000 Btu. To this is attached a one-size-larger-than-normal blower to supply the larger quantities of air considered necessary in warm air panel systems.



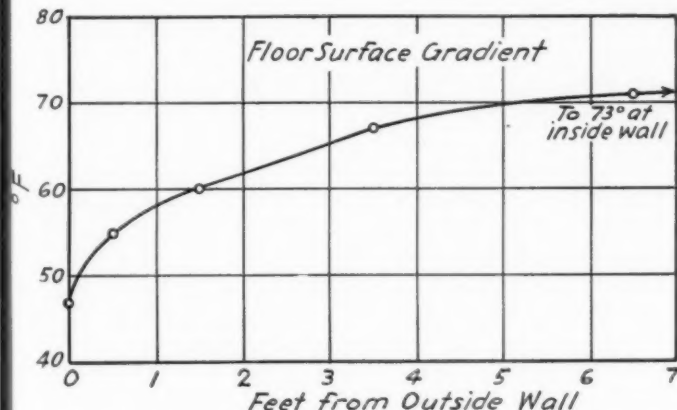
The lower surface of the ceiling panel is plaster on metal lath. The concrete floor has no edge insulation and no under-floor insulation. The outside walls are insulated, as is the ceiling above the panel.

of the secrets of success in ceiling panel systems, a check was made with a pitot tube—check showed 1560 cfm delivery against $\frac{3}{8}$ -in. static pressure.

The furnace and blower are located in one corner of the work room (see floor plan). All temperature control is from a single thermostat located on an outside uninsulated wall of the corner office.

Conditions of Test

The test was run during one night and during most of the following day. Night was chosen so that there would be no influence of people, lights, opening and closing doors, etc. During the night, the outside temperature varied from 11 to 22 deg. with the average 18 deg. During the following day, the outdoor temperature was approximately 25 deg. During the

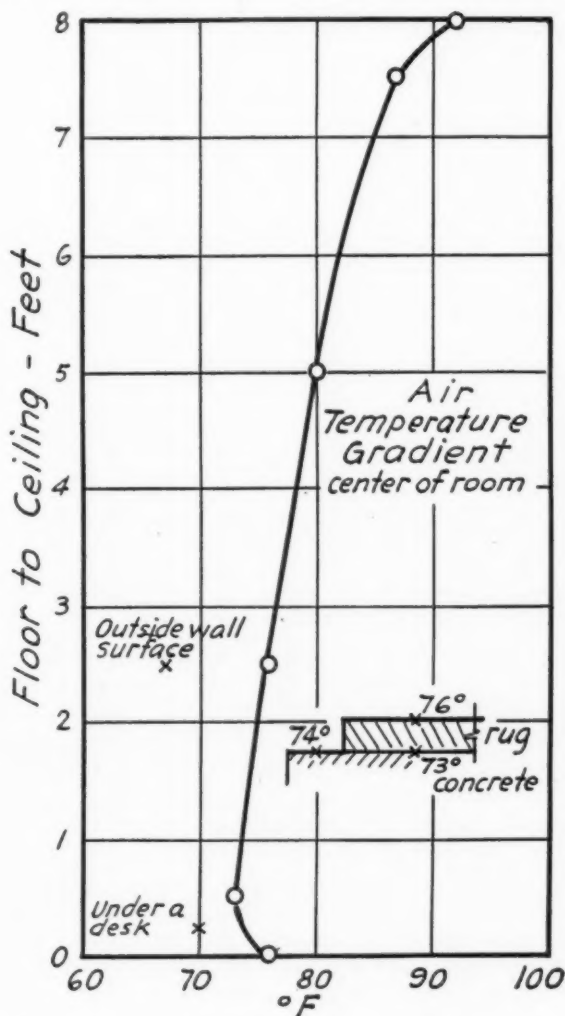


Surface temperature of the concrete at the outside edge was 47 deg. with temperature increases as shown. Note comfortable surface temperatures were not obtained until $3\frac{1}{2}$ ft. in from outside edge.

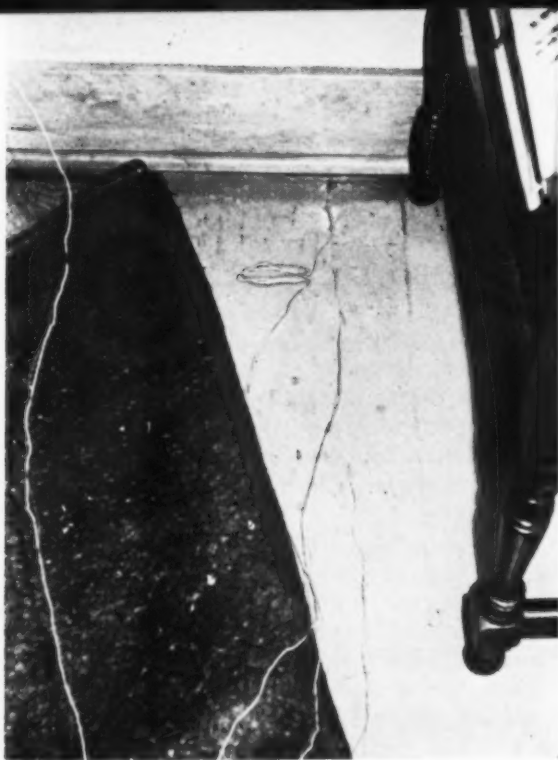
test the wall inside surface temperature was approximately 66 deg. The glass surface temperature was approximately 56 deg. The ceiling surface temperature of the panel near the air incoming supply in the center office varied from 90 to 102 deg. During the same period the ceiling surface temperature near the panel air outlet varied from 80 to 92 deg., with an average of 88 deg.

A twelve point electrical recorder automatically charted temperatures from thermocouples placed around the center office. During the period of test, the system was controlled from the single thermostat. The thermocouples were scotch-taped to surfaces to be checked or were suspended in the air for air temperatures.

Certain definite shortcomings of the test are to be noted: during the test the air volume handled was not recorded; actual incoming and outgoing air temperatures in the supply and return pipes were not recorded; the thermocouple recording the temperature of the ceiling surface near the incoming air supply fell off the ceiling during the night and so recorded only a part of the time; it was not possible to record



Air temperature gradient at center of room shows a variation of 11 deg. (76 deg. on rug to 87 deg. 3 inches below ceiling). These readings were taken under abnormal occupancy—other tests show about 3 deg. difference. The detail shows the rather slight insulating value of a rug. Note temperature of air under a desk—shielded from panel—70 deg.



The thermocouples were not shielded and were fastened to the surface being checked with scotch tape. This picture shows the two thermocouples nearest the outside edge of the concrete floor.

the on and off periods of the burner and blower; unshielded thermocouples were used for all readings.

Nonetheless, since the recordings did cover a period of more than twelve hours during which outside and inside conditions changed only slightly, it is felt that the results which follow are typical of this system on a fairly cold winter day.

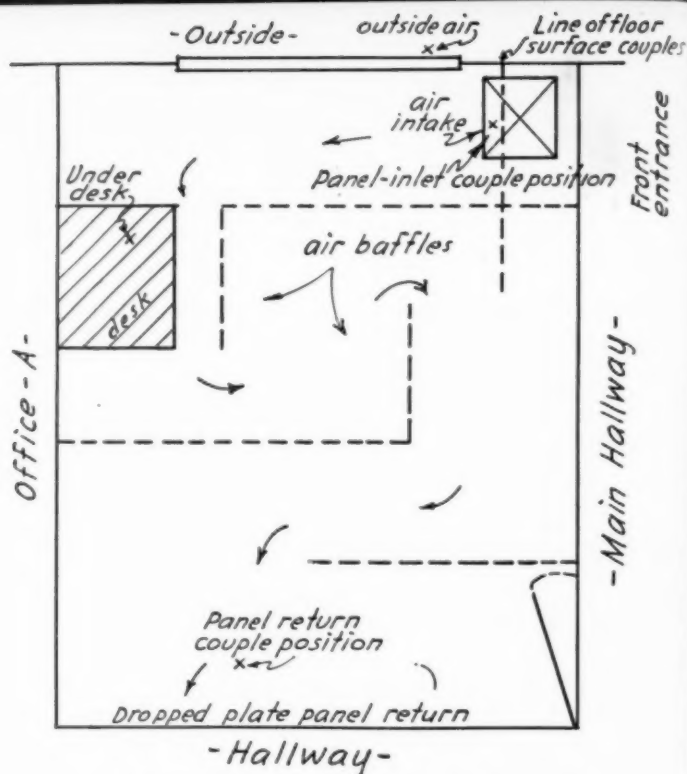
Results

Floor Surface Temperatures: One of the interesting conditions it was desired to check was floor surface temperatures under a ceiling panel. Attention should again be called to the construction of this floor—no edge insulation between slab and foundation; no vapor barrier or insulation under the slab; a high thermostat setting (75 deg.) which was used without change from the daytime setting desired by the women who occupied the workroom.

The floor surface temperatures are shown in the Floor Surface Gradient chart. The outside edge of the floor was cold—47 deg. The floor surface temperature did not level off appreciably until approximately 5 feet in from the outside where it reached 70 deg. The largest temperature increase was realized in the outside 12 to 18 inches.

Air Temperature Gradient: The room air temperature gradient was taken at approximately the center of the center office. The Air Temperature Gradient chart shows that on the surface of the rug the temperature was 76 deg.; 30 inches above the floor 76 deg.; 5 feet above the floor 80 deg.; 6 inches below the ceiling 87 deg.; ceiling surface temperature 92 deg.; outside wall, inside surface temperature 66 deg.

This considerable temperature gradient in the upper part of the room may have been due in part to the number of persons in the room at the time of the record-



Layout of office in which tests were run. The approximate locations of the thermocouples are indicated with guide strips superimposed to show air movement in the panel.

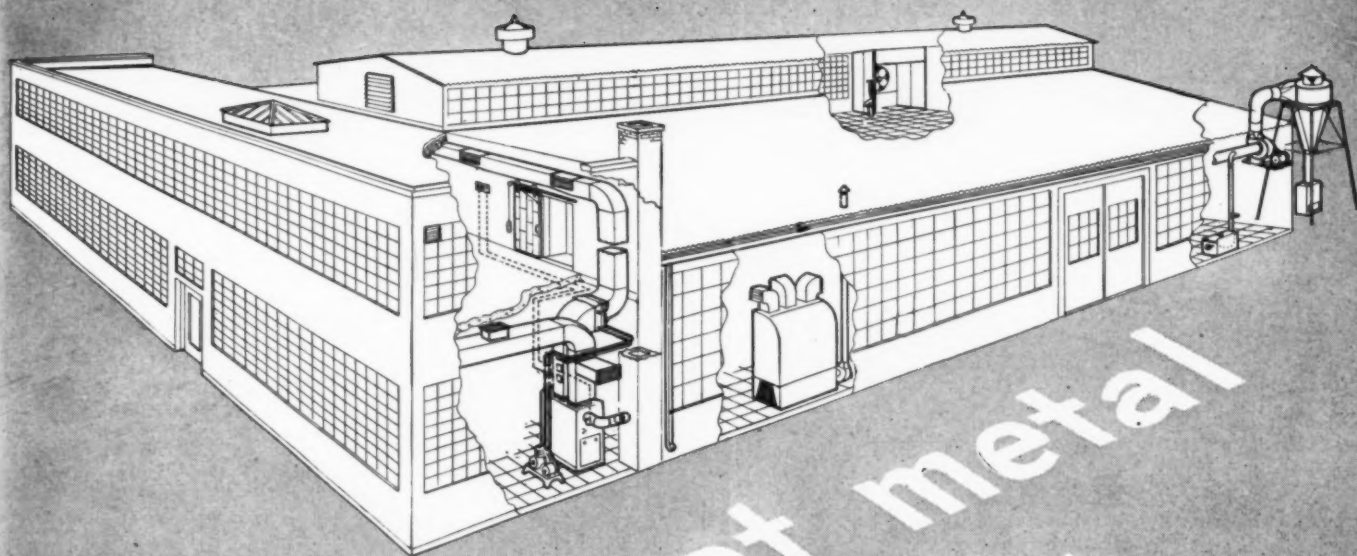
ing, as Mr. W. D. Redrup of The Majestic Company reports that with normal occupancy in this office where the recordings were taken, the temperature gradient is of the order of 3 degrees between points 6 inches above the floor and 6 inches below the ceiling.

Thermocouples were placed on the bare concrete, under the rug, on the rug, and 3 inches above the rug. These temperatures were: under the rug, 73 deg.; bare concrete 74 deg.; surface of rug 76 deg.; 3 inches above rug 72 deg.

A thermocouple was also placed under a desk (therefore shielded from direct radiation from the ceiling panel) and recorded 73 deg.

Mr. Redrup also reports that on one day with an outdoor temperature of -2 deg. the system maintained 75 degrees at the thermostat level without any difficulty. Also during a period when the outdoor temperature dropped 30 degrees in a period of 6 hours the system maintained an even 75 degrees without any difficulty. He also reports that the floor surface temperatures in the workroom (no floor covering on the bare concrete) are completely satisfactory to the women workers with no complaints of hot feet or cold feet.

It is felt that this spot check indicates: (1) a need for insulation at the edge of floor slabs and insulation under the slab to minimize the heat loss from the slab into the earth below; (2) with a ceiling panel it is not possible to get a concrete floor surface temperature higher than the temperature of the surface of the ceiling panel; (3) floor coverings (at least rugs or carpets) do not materially insulate either (a) the concrete from the radiant temperatures above or, (b) reduce covering surface temperatures; (4) for temperature alone, a closed ceiling panel of this type provides warm floors if the slab is properly insulated and satisfactory air temperatures in the living zone.

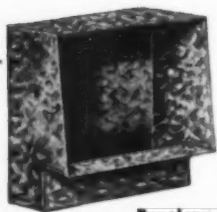


sheet metal

Section

DEVOTED TO SHEET METAL CONTRACTING AND FABRICATING

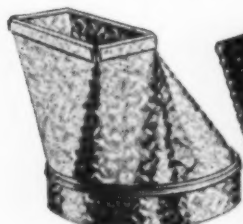




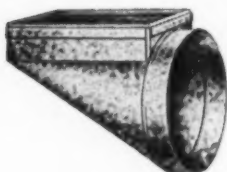
Baseboard
Stack Head



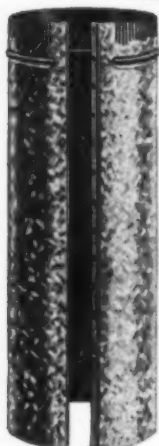
45° Angle



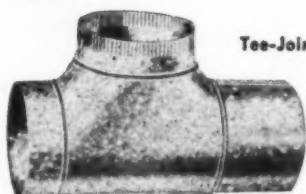
Universal
Boot



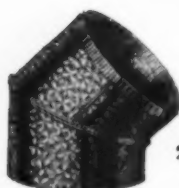
90°
End Boot



Galvanized
Furnace Pipe



Tee-Joint



Adjustable
2-piece Angle



45° Takeoff



Adjustable
Elbow

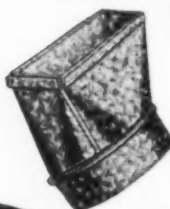


Collar for
Pitched Hood

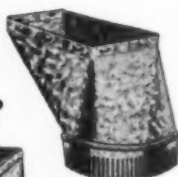
Flue
Cleanout Cap



Adjustable
Flue Thimble



90° Top
Takeoff



Universal
Transformer

45° Angle
Boot



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Q-137



Jigging For Better Welds (Part I)*

IN every welding operation, some means for holding the work must be provided to obtain satisfactory results. The operator, in effect, uses some form of jig for welding whether he simply lays the parts on the surface of a welding table, props them in position with firebricks, clamps them to the table top, or sets them up in an elaborate work-holding device. Without such aids, many repair and production welding operations might not be possible. With them, simple or difficult jobs alike are made easier, and better welding results are generally obtained.

Purposes of Jigs

Regardless of design or usage, the principal purpose of any welding jig is to make it easy for the operator to obtain good results. There are a number of ways to accomplish this. Which way, or combination of ways, is satisfactory for any given job depends upon nature of the work and the type of metal to be welded.

Some operations, for example, may require only that the parts be held in correct relative positions until they are secured by welding. For more difficult work, additional demands must be satisfied. Often a jig must also act as a gage in spacing the parts to assure accuracy of alignment and size in the finished assembly. Such a jig frequently eliminates fitting and complicated setting-up, so that the task of assembling the members for welding is greatly simplified.

Jigs for welding light-gage material help to make this type of work easier through control of warping and edge movements by absorbing heat, by equalizing

the heat effects, or by forcibly restraining or directing the forces of expansion or contraction. Some non-ferrous metals, such as aluminum, require a jig that will back up the material and provide adequate support to prevent collapse of the metal at elevated temperatures. So that failure will not result in the heat-weakened metal, a jig of this type usually needs a device that permits rapid release of any restraining forces immediately upon completion of the weld.

Another common purpose of jigs is to make handling of the work convenient for the operator. Jigs not only can hold parts in alignment and still give free access to the weld areas, but they can also make it easy for the operator to turn the assembly when working continuously in the most convenient position. When assembly for welding, alignment and support of parts, and allowances for expansion and contraction are all handled by the jig, the operator can comfortably devote his full attention to proper welding technique and thereby obtain both increased welding speed and improved quality.

Jigs may be simple or elaborate, but to be wholly satisfactory, each must be designed to fill the specific needs of the operation, with little thought given to cost. Obviously this course is impractical except for mass production. When production volume is small or repair operations are not repetitious, a costly jig will not be justified unless maximum accuracy is absolutely essential. Simple work-holding devices can generally be used for the odd jobs. It is with these devices—and how they can be used to help the welding operator obtain better results with less effort—that this article is primarily concerned.

**Reprinted from Linde Tips.*

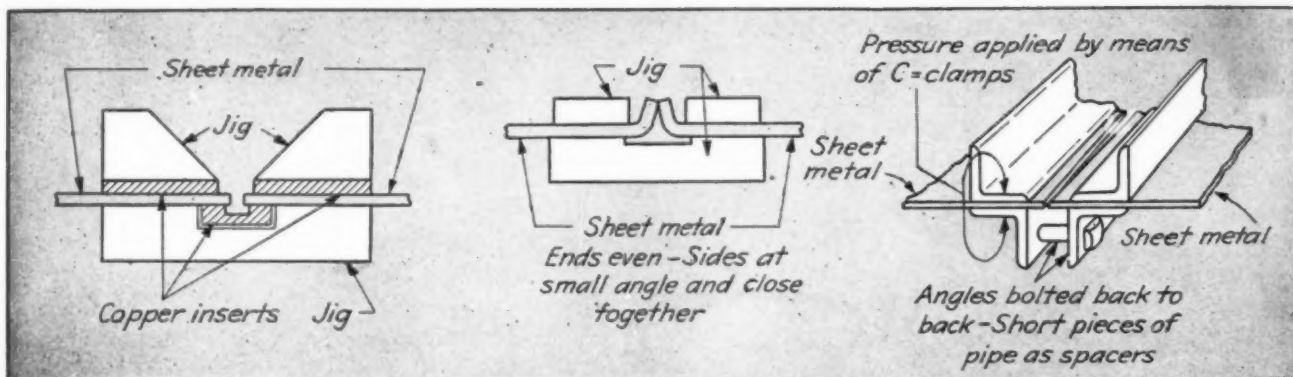


Fig. 1—Three types of bar-clamps that provide bulk in the holding jaws and give free access for welding. Clamping arrangements can be offset so that they will not interfere with the operator.

Simple Work-Holding Devices

Many welding shops have a collection of simple work-holding devices that might be called jigs. Some of them are adaptable to a great number of welding applications and are used almost daily. Others may be used only occasionally for specialized work. By and large, most of this equipment is used to hold the edges of sheet in alignment, to keep parts properly spaced during welding, or to align bars, angles, and other shapes for joining.

In welding butt joints in sheet metal, it is common practice to use two heavy bars (Fig. 1) to aid the operation. These are placed parallel to the seam, an inch or two back from the joint, after the sheet has been properly spaced. The weight of the bars tends to minimize bulges in the sheet, and also to retard lateral movement. In this manner the bars regulate somewhat the speed at which the far ends are brought together by the heat of welding. By varying the weight of the bars and providing adjustable means for clamping the bars down, this simple jig can be made to control accurately the movement of the sheet metal members.

Bars, strips of heavy plate, or other bulky sections of iron or steel placed along a seam will also serve to reduce buckling or distortion by conducting some of the heat out of the sheet. When the cost is justified, the bars can be cast hollow and water-cooled, or copper insets can be used. Either method provides more efficient heat removal. On the other hand jigs of this type, for welding copper and other metals that are rapid heat conductors, frequently require asbestos or some other form of insulation between the bars and sheet to prevent conduction of heat from the weld area.

Eccentric clamping arrangements (Fig. 2) are widely used for tightening purposes. There are two types: the eccentric shaft and the eccentric lever. Both of

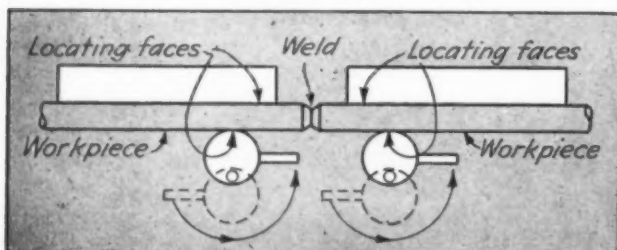


Fig. 2—Eccentric clamps, quick in operation, make it easy to insert, lock and remove work from the jig.

them make it extremely easy to insert, lock, and remove the work from the jig. The eccentric shaft should be arranged so that half a turn causes the wider portion of the shaft to bear on a connecting rod and thus apply clamping pressure.

V-Blocks and C-Clamps

Bars, tubing, small-diameter pipe, and parts of curved, angular, or irregular cross section conveniently can be lined up for welding by the use of V-blocks. Guides of this kind can be either cast or shaped from heavy steel sections with the oxy-acetylene cutting blowpipe. They should be accurately machined, however, so that any work supported in them when they are on a level surface will be true after the welding is completed.

At other times, proper alignment and very satisfactory results can be obtained by using C-clamps to hold the work to the surface of the welding table, to straight bars, to the flange of a section of rail, or to lengths of angle iron. Although C-clamps are restricted

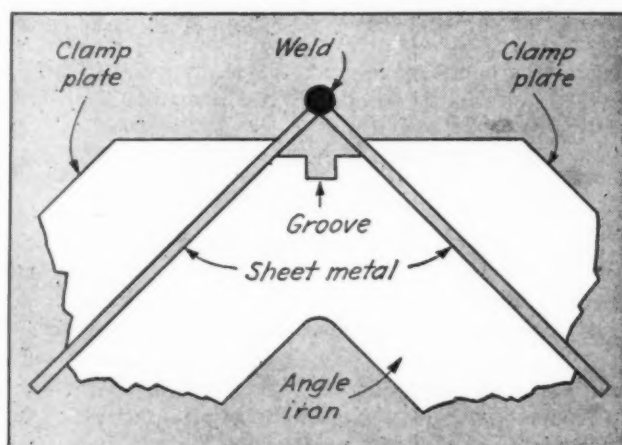


Fig. 3—In jigging for square corner welds, angles used to back the joint should be grooved to insure penetration. This groove is $\frac{1}{8}$ in. wide and $\frac{3}{16}$ in. deep.

to use at the ends of a seam and additional aids must be used with them for a lengthy joint, they are nevertheless useful in a great number of ways. To make a corner weld in a rectangular container, for instance, C-clamps can be used to hold the two edges to a section of angle iron. By grinding off or grooving the corner of the angle iron thus clamped behind the weld (Fig. 3) a slight space is provided that makes it easier to

obtain complete penetration.

H-Clamps

Other types of clamps and spacing devices generally used have a much wider range of application. Chief among these is the simple arrangement, known as the H-clamp (Fig. 4), which consists of two pieces of plate

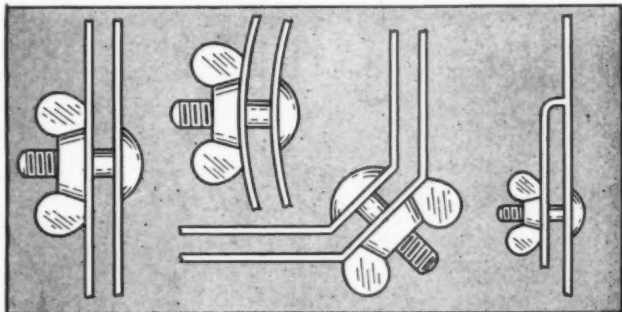


Fig. 4—H-clamps, with jaws bent to conform to the contour of the work, are particularly valuable for holding the edges of tank shells and other cylindrical work.

usually about 6 in. long and 2 in. wide, drilled or slotted in the center. A 3/16-in. or 1/4-in. wing bolt passes through the holes. These dimensions, of course, vary with the work for which the clamp is intended. Thickness of the work, location of the seams, and clearance on either side of the weld will determine both the size of the clamping jaws and the length and diameter of the wing bolts needed. When H-clamps are to hold curved or irregular surfaces in alignment, the jaws can be bent to conform to the contour of the work. Clamps of this kind are particularly valuable for holding the edges of tank shells and other cylindrical articles while welding both longitudinal and circumferential seams.

Because they can be placed at any point along a seam, in any desired number, these clamps are especially useful wherever long joints in light-gage sheet must be welded. With these clamps, the sheet can be spaced at such close intervals that the possibility of serious deformation is practically eliminated. As welding progresses, clamps can be removed one by one or moved along the joint ahead of the welding to assure correct spacing until the entire weld is completed.

The wedged H-clamp, or double L-clamp (Fig. 5) is a variation of the simple H-clamp just described. This type of clamp is frequently used to hold sheets when it is difficult or impossible to reach the reverse side of the seam. A section of T-iron about 3 in. long, or a tee made by welding together two pieces of scrap metal, is slotted to receive a wedge-shaped key. Two

washers or flat plates are cut from small pieces of scrap, slotted, and placed over the slotted member of the tee. Sheet edges are then placed between the jaws formed by the washers, and these washers are clamped tightly to the sheet by driving the key into the slot. Because such clamps are simple, inexpensive, and easy to make with the blowpipe from scrap material, they can be made up especially to meet the requirements of any particular job.

Wedged H-clamps or double L-clamps are used in the same way as the H-clamps previously described. If too wide a gap is being left as welding progresses, the keys of clamps still in the joint can be loosened to allow more lateral movement in the sheet. In this way, the results of the expansion will be retarded rather than stopped altogether, and some lateral distortion will be avoided that might otherwise take place.

Wedges and Levers

Sometimes it is necessary to supplement clamps with wedges and levers to take care of local conditions during welding. If the space between the sheet seems to be closing too rapidly, wedges can be used along the joint in conjunction with the clamps already placed, making it unnecessary to remove the clamps or realign the parts.

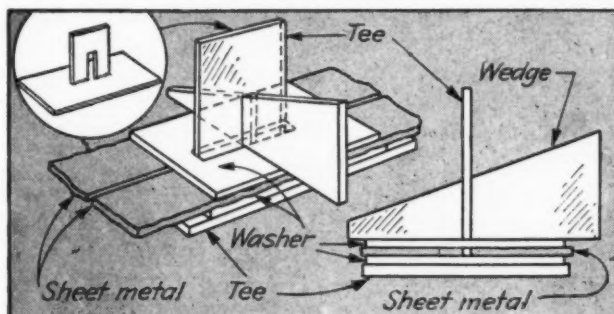


Fig. 5—The wedge-shaped H-clamp, or double-L clamp is simple, inexpensive and easy to make from scrap material.

Perhaps the edges do not come together in the same plane. In such a case, levers can be used as pry-bars to bring the lower edge up to the level of the other. A discarded automobile spring leaf is ideal for this. It has sufficient stiffness, and the taper at the end is particularly handy in the narrow gap close to the weld. In some cases a helper may be needed to pry the sheet edges into alignment; in other cases the weight of the lever alone will correctly adjust the edges.

More State Income Taxes

WITH costs increasing and income not keeping pace with requirements, a number of states are examining the possibilities of state income taxes as a means to increased revenue. Bills are now pending in Michigan and Rhode Island. The bills being considered in these states are quite different from state tax laws now in effect in that the Michigan and Rhode Island bills eliminate complicated state forms:

- (1) Rhode Island would take a percentage of the

Federal tax;

- (2) Michigan would take a percentage of the Federal net income after the deduction of state exemptions.

Because of the saving in administration costs which probably will result from this simple method, Michigan's and Rhode Island's plan may set the pattern for other states considering a state income tax.

Pattern Development for

Heavy Gauge Blowpipe Fittings*

[Cylindrical Compound Angled Chute]

By William Neubecker*

A CORRESPONDENT desires information on laying out a cylindrical compound angled chute, 18 inches, inside diameter, to be made from No. 11 gauge steel, butt welded. Fig. 1 on the full page drawing shows the foreshortened plan and elevation of the problem to be solved. Note that when the chute is viewed in plan it has an angle of 30 degrees, but when viewed in elevation its angle is 45 degrees.

As both of these arms are foreshortened, neither show their true length and it becomes necessary to find the *true elevation*, which will give the *true angles* of the chute, from which the patterns can be developed. As the inside diameter of the chute is to be 18 inches and as No. 11 gauge is $\frac{1}{8}$ inch thick it becomes necessary to compute the *neutral diameter*, (which is required in developing the pattern shapes) as follows: Add one half the thickness of the metal to the inside diameter thus: $18 + \frac{1}{16} + \frac{1}{16} = 18\frac{1}{8}$ inches; the *neutral diameter*, as indicated in the plan in Fig. 1 in its proper relative position as shown, project the center line of the foreshortened elevation, making the angle 45 degrees as desired. While the full foreshortened elevation is shown, it is only necessary to draw the foreshortened center line *C-D-E*. To find the *true elevation* and true angles proceed as follows: Take a tracing of the plan in Fig. 1 and place it at the right on the drawing, so that the line *A-B* will be in a horizontal position as shown by *5-5'*. Now from the intersections *C-D-E* in Fig. 1 draw horizontal lines to the right and intersect them by perpendicular lines drawn from the points *X* and *B'* in the horizontal plan above, thus obtaining the intersections *C'-D'* and *E'*. Draw lines from *C'* to *D'* to *E'* which shows the *true angle* of the chute. To obtain the miter line of the true angle, use *D'* as center and with any desired radius, draw the short arcs *a* and *b*, to intersect the vertical and angular center lines respectively. Now using *a* and *b* as centers, using the same or any other radius inter-

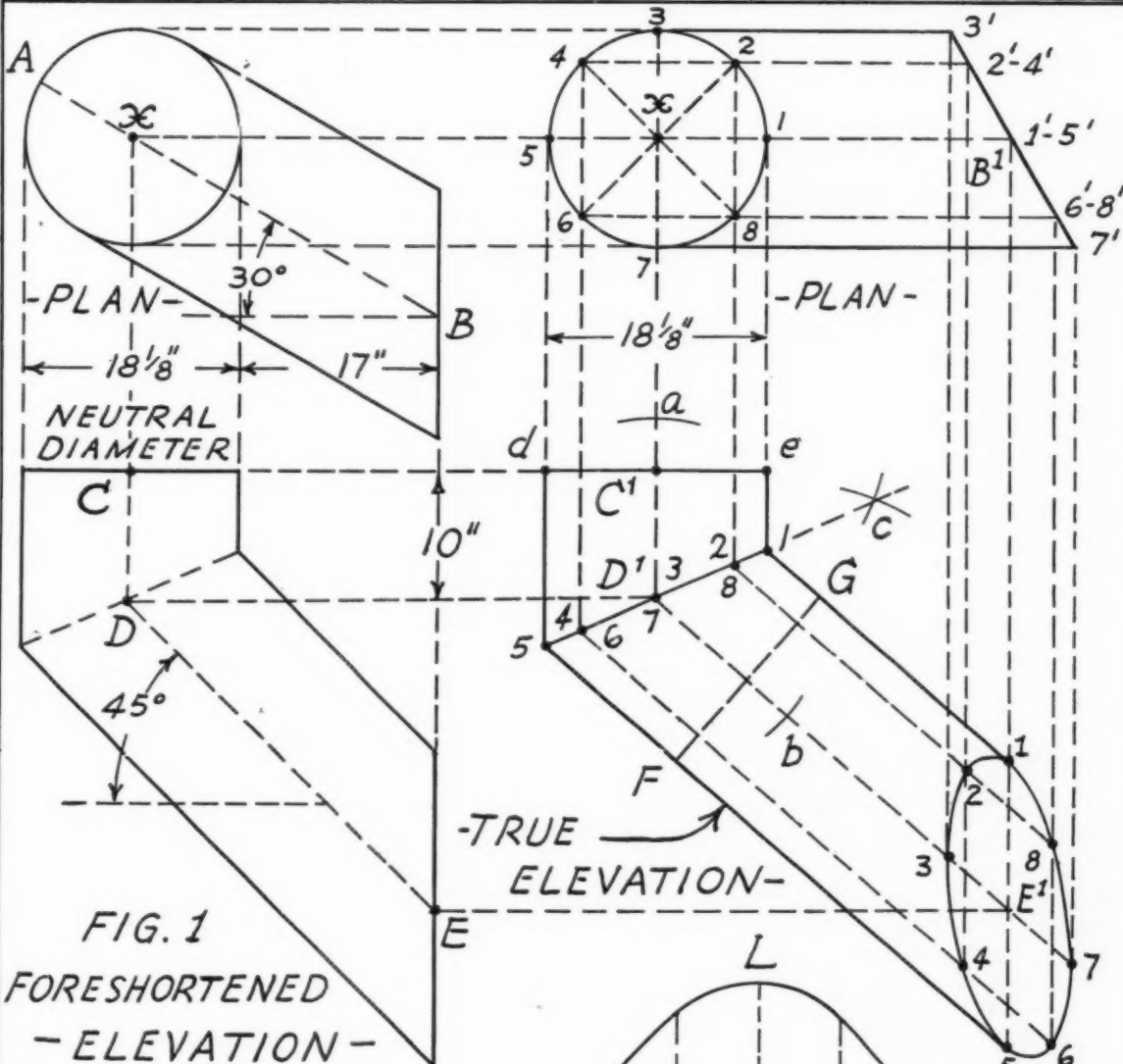
sect arcs at *c* and draw the miter line from *c* through *D'* indefinitely. Now space the circle in plan in equal divisions as shown from 1 to 8, from which points draw perpendicular lines to intersect the miter line 1-5 in the true elevation as shown by similar numbers. In a similar manner from the divisions 1 to 8 in the circle in plan, draw horizontal lines to intersect the line *3'-7'* as shown by similar numbers. From these intersections 1' to 8', perpendicular lines are drawn indefinitely and are intersected by lines drawn from similar numbered intersections on the miter line 1-5, parallel to the center line *D'-E'*. Through the points of intersections so obtained, trace the elliptical outline representing the oblique intersection against the surface *3'-7'* in the plan above.

The patterns for the long and short arms of the chute can now be developed.

To save time the two patterns can be developed on one drawing as follows: Set off the distances *5-d* and *1-e* in the true elevation, as shown by *5-F* and *1-G* and draw the measuring line *F-G*. Now draw the line *F'-G'* at the bottom of the drawing, on which place the girth of the circle in plan as shown by similar numbers, through which draw lines indefinitely at right angles to *F'-G'*. Measuring from the line *F-G* in the true elevation take the various distances to points 1 to 8 on the miter line 1-5 and place them in the pattern, on similar numbered lines measuring in each and every instance from and below the line *F'-G'*. Trace the miter cut through points so obtained, then will *H-J-I-1* be the net pattern for the short arm of the chute. Now again measuring from the line *F-G* in the true elevation, take the various distances to the intersecting points 1 to 8 in the elliptical outline and place them on similar numbered lines in the pattern, measuring in each and every instance from and above the line *F'-G'*. Trace the miter cut through points so obtained, then will *H-J-K-L-M* be the net pattern for the long arm of the chute.

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XIII - PATTERNS FOR COMPOUND ANGLED STEEL CHUTE MADE FROM N^o 11 GAUGE -



Ventilating a Melting Pot

THE problem of exhaust ventilation for a melting pot covers some details which will confront the installer in handling other types of ventilation. Principal among these is motor protection, control, and flexibility of operation.

The pot in question is approximately 6 feet in diameter and is covered with a completely enclosed hood. The access door is about 4 feet x 4 feet, giving access from almost the entire front of the hood.

This hood is already equipped with gravity ventilation, but that is far from sufficient. It is purely a matter of volume, as the gravity action set up by the intense heat of the molten metal is fairly dependable and uniform. There is simply not enough of it. Fumes produced on the surface of the metal back out through the top of the access opening, into the plant. When impurities are raked off of the top of the molten mass, these fumes are produced more rapidly; and when a large metal piece is put into the pot to be plated, oil burning off the surface of the piece sends up smoke in great volume.

Solving the Problem

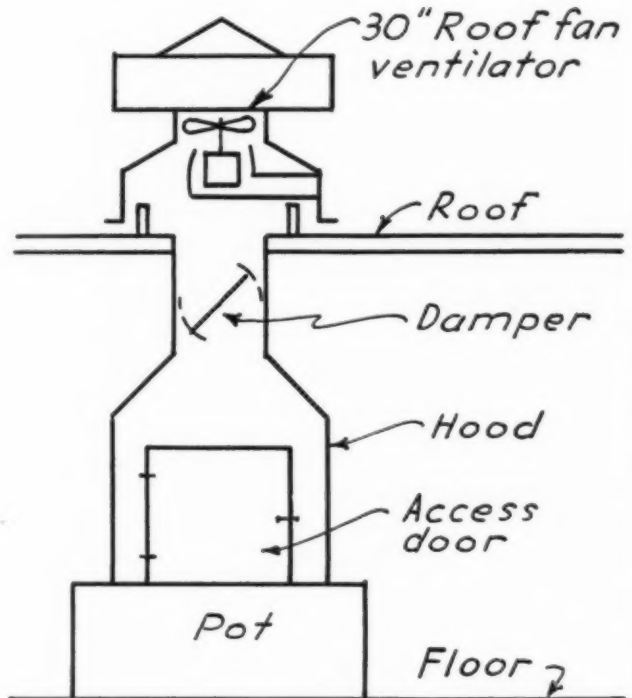
The basic problem is relatively simple. Fan action is necessary. A roof fan ventilator set on the roof immediately above the pot, and connected by duct to the top of the hood, will take care of this. The question of volume is difficult to arrive at accurately because of varying conditions. The only practical solution is to plan on enough exhaust capacity to be certain of meeting the worst condition, together with control so that the volume can be cut down to suit the conditions as they obtain from time to time. A propeller type fan will be better, since its low resistance makes it possible to obtain the necessary volume much more economically than with a centrifugal type fan. Another advantage of the propeller type for this particular job is that the dampering can be done without changing the motor load. Also when the hood door is closed with the fan still running, this type fan will drop down in capacity to almost nothing, due to the lack of intake. An extremely low pressure will not be set up inside of the hood, which would have a tendency to pull in air through cracks and crevices, thereby cooling the molten surfaces in spots and adversely affecting the operation of the equipment.

Capacity Needed

As to exhaust capacity, a velocity of 500 feet per minute through this 4 ft. x 4 ft. opening (16 sq. ft.) will give 8,000 cfm. Such a velocity, of course, will not be necessary close to the surface of the molten

metal, but it will probably be necessary at the top of the door, to counteract the boiling out of the fumes at that point. Incidentally, this velocity cannot be distributed to suit requirements since according to the old law of physics, pressure is disseminated equally in all directions. Therefore the exhaust pressure supplied, will theoretically be distributed equally throughout the section of the door opening.

A 30" propeller type roof fan ventilator will be ideal for this purpose. The rated capacity will be slightly



in excess of the 8,000 cfm, and the manufacturer has figured in a factor of safety sufficient to take care of unfavorable contingencies such as restricted intake. The restriction of intake will of course be due to the lack of sufficient free flow of air into the room where the pot is located. If the restriction into this room is at any time such as to set up an area of low pressure within the entire room, the fan will be operating against a resistance, measured by the difference between this room pressure and the outside air pressure. It may be assumed that this will not be great, and that a reasonable factor of safety will be sufficient. Experience with average factory conditions warrants this assumption.

(Continued on Page 168)

Pneumatic Tools— For the Sheet Metal Shop

A series dealing with the numerous uses to which these valuable tools can be put around the ordinary shop. Proper utilization of pneumatic tools can result in considerable savings of time and materials.

By Ernest E. Zideck
Sheet Metal Consulting Engineer

Blank Preparation

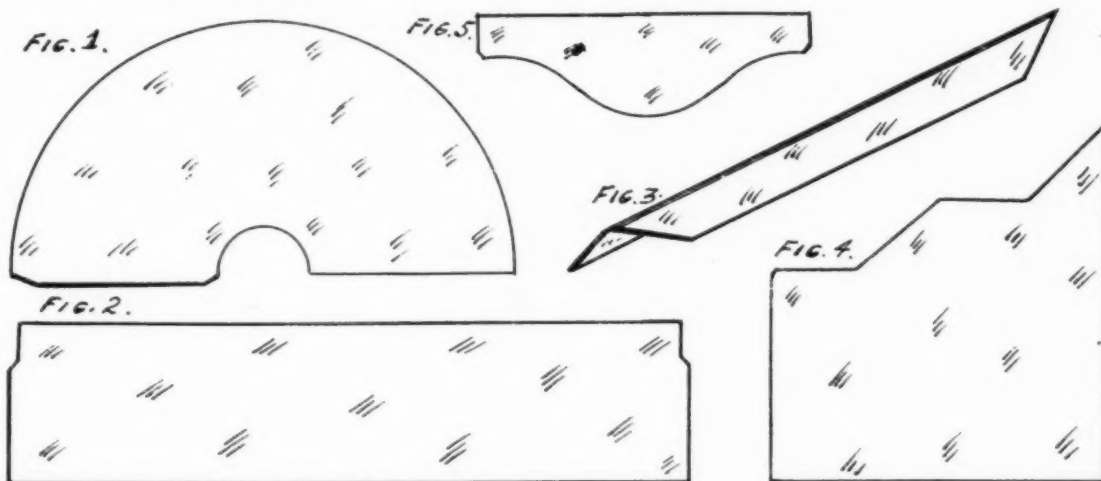
UNDER blank preparation is understood the shearing, cutting, sawing, or press-blanking of a piece of metal for processing in a sheet metal shop in conformity with sheet metal working principles and practices of the trade. The term *blank* signifies a piece of metal sheared, cut, sawed or press-blanked to predetermined, carefully figured dimensions and edge-contours. In other words, a *blank* is a metal piece that can be worked into a certain product or product component without it being necessary to shave off, mill off, or grind off oversize or surplus metal as a machine shop does. And any piece of metal, be it sheet, bar, rod, wire, angle or extrusion, so sheared, cut, sawed or press-blanked, is then a *blank*, to differentiate from pieces of metals not so processed.

Meaning of Term

The term *blanking* applies to the perimeter of the piece of metal, not to holes or cutouts in its body or

interior. To demonstrate: a piece of angle iron cut to figured length and sawed at its ends on 45 degrees to fit any other angle similarly cut, as happens when we build an angle iron frame weld-joined in its corners, is a *blank*, irrespective of whether the certain angle piece or frame component is later provided with holes or slots or other interior cutouts or remains without same; similarly, a piece of sheet metal sheared to a half-disk and with an exterior cutout as for a funnel is a *blank*; and a piece of wire figured to be inlaid into the rim of a can or vessel, the wire-length predetermined and augmented by the wire's shrinkage in rolling or corner bending, is regarded as a *blank*. In Figures 1, 2, 3, 4 and 5 of the drawings accompanying this text are shown *blanks* as follows: (1) the blank of a funnel, (2) the blank of a pipe section, (3) the blank of an angle frame part, (4) the blank of a bandsawed or press-blanked miter part, and (5) the blank of an elbow part. It will be noted in the illus-

BLANKING OR, PERIMETER CONTOURING

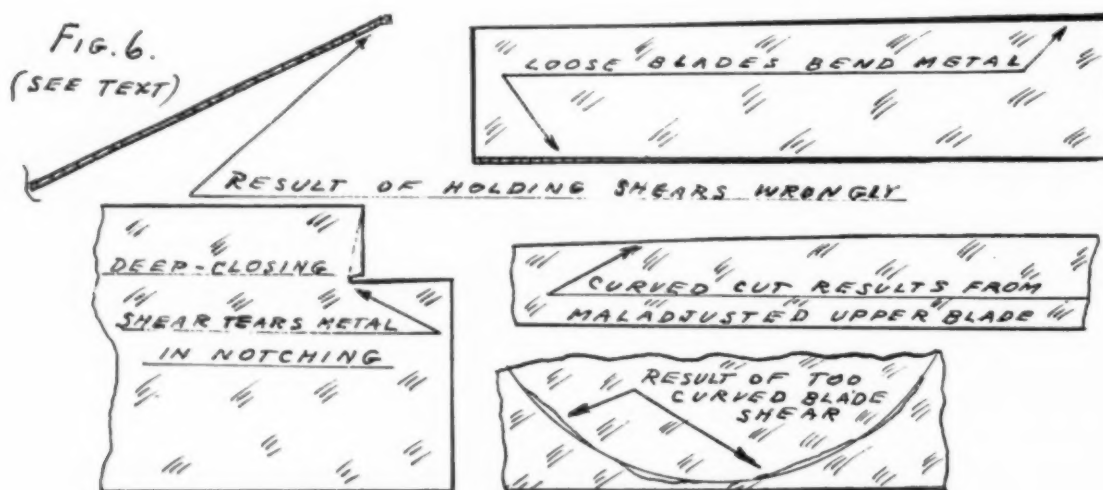


trations of the several blanks that each can be either *sheared* or *sawed* by starting the operation from the perimeter or outer edge of the metal piece, and terminating the operation similarly in the edge-portion of the metal. We can use hand-shears or a hacksaw in this blanking; we can use the squaring shears and the hand-shears in doing the work; we can cut the angle in an angle cutter or cut it to the miter in a circular or a bandsaw; and we can fashion the perimeter of the metal piece to any desired contouring of the metal edge by using the shears or the saw or operate a die in a press, doing the blanking in lighter metals in this manner.

Basic Step in Metal Work

Blanking to predetermined size and shape of the metal piece destined to become a fit component of a product is the first and one of the most important in the series of operations called for in sheet metal working. The tools of the processes employed or employ-

curved shearing combination pattern solid steel snips are preferable; (e) a combination pattern with inlaid blades shear is easier guided in shearing, though it will not equal the performance of (b) in shearing a heavier gauge sheet; (h) compound action snips (aviation) are especially adapted for piercing the metal in cutting holes in the sheet and are easy to guide in circular shearing of even a heavier gauge metal; (i) light snips are useful especially in interior cutting such as is done on electric sign letters and in trimming the metal edge; and (j) B-X snips are combination metal and wire cutters, useful in assembly and installation. Needless to say, every hand-shear should be held on a 90 degree angle to the sheet sheared to avoid metal bending and forming an upturn or step along the sheared edge. In any hand-shearing of metals, the heavier gauges specially, it is helpful to lift the metal away from the face portion of the lower blade, the lifting of the parted metal facilitating the shear's forward movement. The tighter the blades



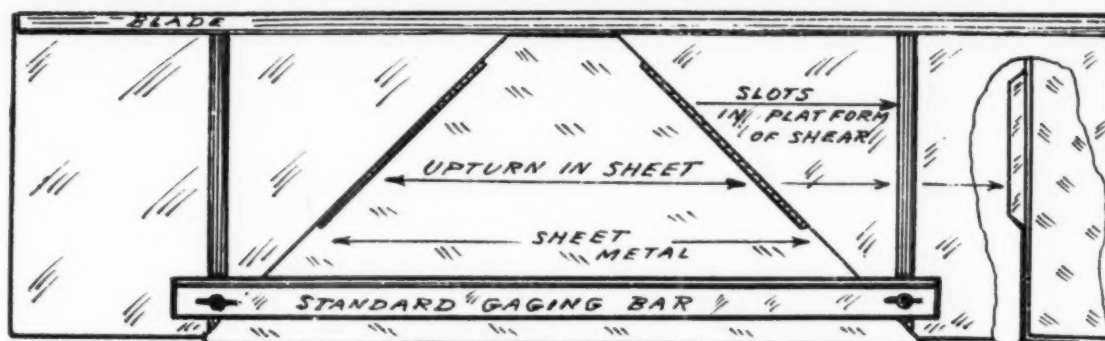
able in this fashioning of the metal to the blank are indicated above; they are: (1) hand-shears, (2) squaring shears, (3) hand-operated metal saws, (4) lever-operated metal cutters, (5) power operated metal saws, including hacksaws, circular saws, bandsaws, carborundum disk saws, (6) hand or power-operated curved edge or rotary shears, (7) power-operated bar, rod and angle cutters, (8) flame cutters, and (9) blanking dies operated in a press. The sheet metal worker is sufficiently familiar with all varieties of hand-shears and we do not need to enlarge upon their specific uses or performances except as follows: (a) the most common shears, the so-called tinner's snips, is the most practical for *notching* because its blades of solid steel are pointed and not closing to a great depth; shears that close deep at their blade points cause the metal to tear in the notch or bend up the metal, the disfigurement necessitating an additional operation by mallet or hammer, straightening out the metal; (b) for shearing a heavier gauge metal a shear with inlaid steel blades proves the best; (c) for shearing an extra heavy gauge metal on a straight line the small regular pattern snips will do good work; (d) the curved-blades snips is the standard for shearing on curved lines, although for light metal and multi-

are set the better shearing will result, though the tightness must not interfere with facile movement of the blades.

Use of Squaring Shears

With circular, curved edge and electric nibbling shears we shall deal later. For the present we shall concentrate on the *squaring shears*, both foot- and power-operated, because this tool is all-important in the contemporary sheet metal shop and is less understood than are the hand-shears. The squaring shears operate on the same principle as do the *straight-cutting* hand-shears, in that one lower and one upper blade close one over the other and in their closing part the sheet. A difference is in *feeding* the metal to the shears; in hand-shearing the metal comes into the space between the opening blades from the front of the blades; in square-shearing the metal is fed in-between the blades laterally, from the side of the blades, same as if we take a hand-shear or a bench shear and secure one-half in a vise, with the other half free to move up and down, and taking a narrow strip of a sheet, feed it into the shear from the side of the blades, manipulating the shear's upper, free half, to open and close, the descending blade cutting

FIG. 7 SHEET METAL GAGE FOR SQUARE SHEARS



the metal and parting it.

Importance of Blades

In the squaring shear the lower blade is secured to the side of a solid metal base forming a platform for the sheet to repose on as it is being fed in-between the blades, while the upper blade is fastened, by bolts or setscrews, to a solid metal bar moving up and down in housings, this upper blade to pass the sharp edge of the lower blade as it descends, moved down by either a foot operation or, in power shears, by rotating cams or cranks. In this latter machine the upward movement of the upper blade is accomplished by the rotating cam or crank, while in the foot-operated shears the uplifting of the blade is the work of heavy coil springs contracting, moving the steel bar holding the lower blade upwards. As in the hand-shears, the sharpness of the blades and their tight closing against one another as they pass is the secret of good shearing. If the blades are dull or do not close tightly in passing, the metal will bend over the lower blade rather than part. Both the foot shear and the power shear have setscrews operating in the upper-blade bar housings; these setscrews are intended to adjust the upper blade for a tight fit against the lower blade.

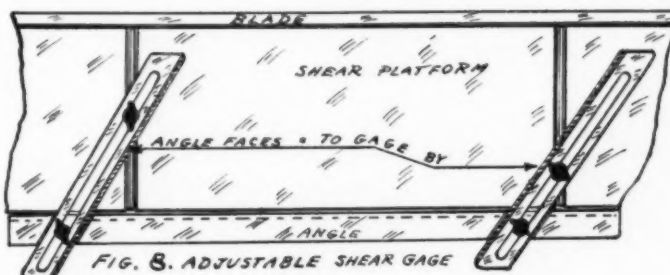
Don't Overload Machine

The older makes of squaring shears, intended for shearing light gauges of metal, on which they performed admirably, have often become defective by abuse, shearing gauges of metal beyond their capacity. The bar holding the upper blade was not strong enough for this heavier metal, nor were the housings built for withstanding the added pressure exerted in shearing the metal, and the blade-fastening itself gave way under the pressure. The result was a pair of worn out housings, a bar slightly bent rearward, and the blade moving on the bar bent away from the more securely lodged lower blade in its middle. Light metal shearing had become almost impossible on this deranged shear, and in shearing a heavier gauge sheet the cut across it was curved instead of straight, the curved edge interfering with gaging by it in the forming and other processing of the part. The new machines, especially power shears, are built for thicker metals, their capacity being commonly the 11-gauge steel and, in the larger machines, $\frac{1}{4}$ inch plate. The upper blade in these machines is up to one inch steel, beveled down to $\frac{1}{2}$ inch thickness at its base, and the bar to

which it fastens is correspondingly thick steel, in the heavier machines up to 12 inches in width, moving in housings which are calculated to withstand the pressure of the $\frac{1}{4}$ inch plate shearing and at the same time preserve their blades tight-fitting for shearing tin foil or thin paper. These extra heavy duty machines are quite expensive, and inasmuch as only a few of the fabricators will have use for them, since the great majority of the sheet metal shops work the lighter gauges of metals, we shall here deal with the latter makes, describing a machine built for a maximum 14-gauge steel shearing.

Use of Gages

This shear has two extended arms holding the gaging bar, the arms also adapted for fastening in the rear of the machine for feeding the sheet into the shears from the front of the machine. This gaging bar can be moved in the slots of the arms to any desired angle gaging, the same facility accruing if we fasten the gage in the



rear of the machine. Accordingly, we can shear in this machine parallel strips of the metal, square blanks, angular blanks, triangles, hexagons and other shapes by adjusting the gage in successive operations. The manufacturers furnish the standard gages possibly separate gages for the rear of the machine, but they do not make other gages as the shear operator will find he needs. These auxiliary gages he can construct himself of sheet metal held in position by the regular gaging bar tightened in the slots over it, or the shop can construct gages of smooth-faced angles (iron or steel), and fashion them to fasten by bolts in the platform slots or through holes drilled in the platform. One useful gage made of sheet metal as aforesaid is shown under Fig. 7 for gaging corners to be cut off from sheets for seams, such as was common in preparation of tin roofing at one time. In

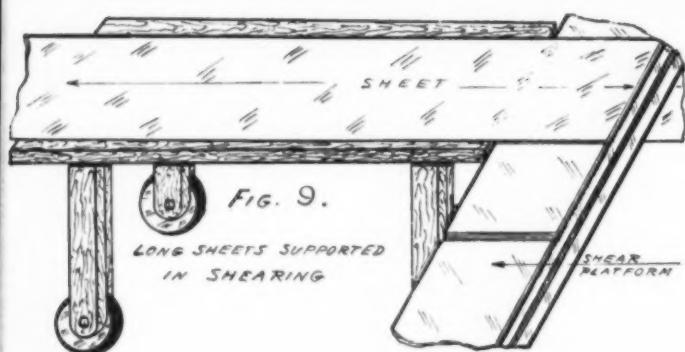


Fig. 8 is suggested an angle iron gage which may be fastened by bolts to either one of the two slots in the platform, this gage supplementing the standard gages in smaller blanks shearing.

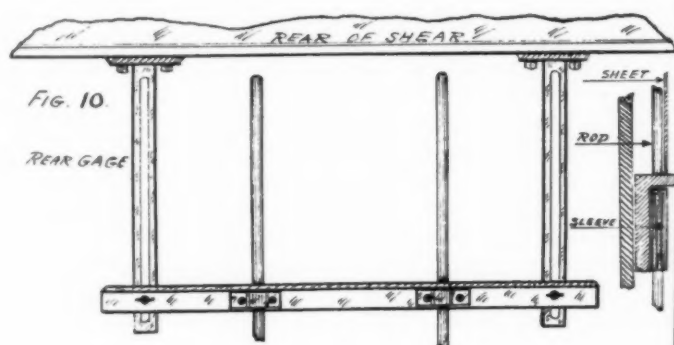
Manipulating Sheets for Shearing

Difficulties arise in square shearing long sheets of metal that must be fed into the machine frontally owing to the operators' upholding of the sheet making it difficult for him to also hold the edge of the metal tight to the gaging bar and then use his foot in releasing the clutch for the descent of the blade. In many shops this particular difficulty in handling the long sheets has been eliminated entirely by the use of a wheeling bench, shown in Fig. 9, the bench top upholding the sheets at the level of the shear's platform, and the operator sliding the metal, sheet over sheet, into the machine, himself standing at the machine with both hands free to hold the metal against the gage and moving his foot to release the clutch (or operate the foot shear), not causing the sheet to move as it would if he held it in his hands. A second difficulty arises if we must shear the sheet by the rear gage at a distance from the blades permitting of the metal bending or slipping past the gage. Surely, the arm of the machine holding the gaging bar will uphold the sheet, but if the sheet is not wide enough to repose on both of the two arms and if it is of a width permitting of the balancing of the metal upon the one arm, correct gaging by the sheet's edge will be impossible. In such cases it is of advantage to use shop-constructed sheet supports, shown in Fig. 10, which can be inserted through holes drilled in the rear of the machine (if such is practical in view of the design of the machine), or move in sleeves fastened to the gaging bar or the arms, whichever is the most feasible. In many cases it has been found that the wheeling bench, Fig. 9, will do good service in the shearing of sheets fed from the rear of the machine, in that the sheets are reposing on the bench top and can be reached by the operator through the gap between the blades. This manipulation is not recommended, however, in connection with foot operated machines or clutch release, especially not if there is more than one operator at the shears. It is easy to step on the releasing bar with disastrous consequences if the hands of the operator or his helper should happen to be in between the blades. In the shearing described it is much better that the helper be stationed in the rear

of the machine, pushing the sheet forward for shearing while the other man manipulates it against the gage.

Shear Needs Space

The greatest impediment to efficient square-shearing, for which the shop itself is responsible, is the crowding of the machine between other machines or between stationary benches not serving the aforesaid uses of supporting the sheets during their processing through the shears. The machine should be positioned with enough room in its front and its rear for the wheeling bench, or an equivalent sheet supporting means, to be stationed there whenever long sheets of metal are to be processed through the machine. Hemmed-in squaring shears necessitate the lifting of the sheet by the operators, the lifting often being over other machines or obstructions, and it is obvious that the shearing of the metal, with its one end held in the air, cannot proceed smoothly. Usually the operators who must deal with long sheets of metal in a crowded space waste the metal, making a haphazard cut first and then, with the sheet that much shorter, doing the prescribed gage-shearing. In almost any



shop sufficient room can be found for the squaring shear, with at least five feet clear space in front and in the rear of it, the clearing permitting of placement of sheet supports which would make shearing easier and conserve metal.

Many other important details may be brought forth in connection with blanking by hand-shears and square shears and we shall, as we proceed here to discuss and show in sketches the various other blanking tools and machines, find occasion to refer back to an operation that is best done by the hand-shears or an operation that should be done in the squaring shears, on such occasions mentioning additional details, or shop-constructed aids, facilitating the operator's tasks. It is not the purpose of these articles to say that one make tool or machine may be better than the next one, but rather to arouse the operator's interest in the machine at hand, make him study it in its least detail and plan for improving it, providing for himself similar aids as here pictured, which undoubtedly will tend to make the machine perform correctly and make his work easier and more productive.

Soldering Aluminum & Stainless Steel*

ONE of the most puzzling phases concerning aluminum has been the soldering of that metal. This generally is considered impossible, but while there are some difficulties connected with the process it can be done successfully.

Obstacles

Before taking up the actual soldering operation it will be well to mention those obstacles which have stood and still do, to some extent, stand in the way of the soldering process. An understanding of what they are ought to make possible better performance when the actual soldering is tried.

The obstacles to successful aluminum soldering are two in number. The first is the rapid oxidation of aluminum which prevents easy application of the solder; the second is the peculiar, electrically opposite nature of aluminum which tends to decompose the solder once it has been applied.

From this it is evident that it is not only hard to get aluminum soldered, but it is also difficult to keep it soldered.

*Reprinted from *Buying and Business Guide*, Chart from L. B. Allen Co.

Consequently, these obstacles must be overcome to make the soldering successful.

1. Overcoming the first obstacle

The great affinity of aluminum for oxygen, which makes aluminum so valuable in the Thermit process of producing pure iron, makes trouble when it comes to soldering. For once heat is applied to aluminum (and this is to a lesser extent true of its alloys) a thin skin of almost invisible oxide instantly covers the surface. While a flux may remove this momentarily, it will so quickly reappear that a separate application of flux, and then of solder is not possible. (This is not true of other metals).

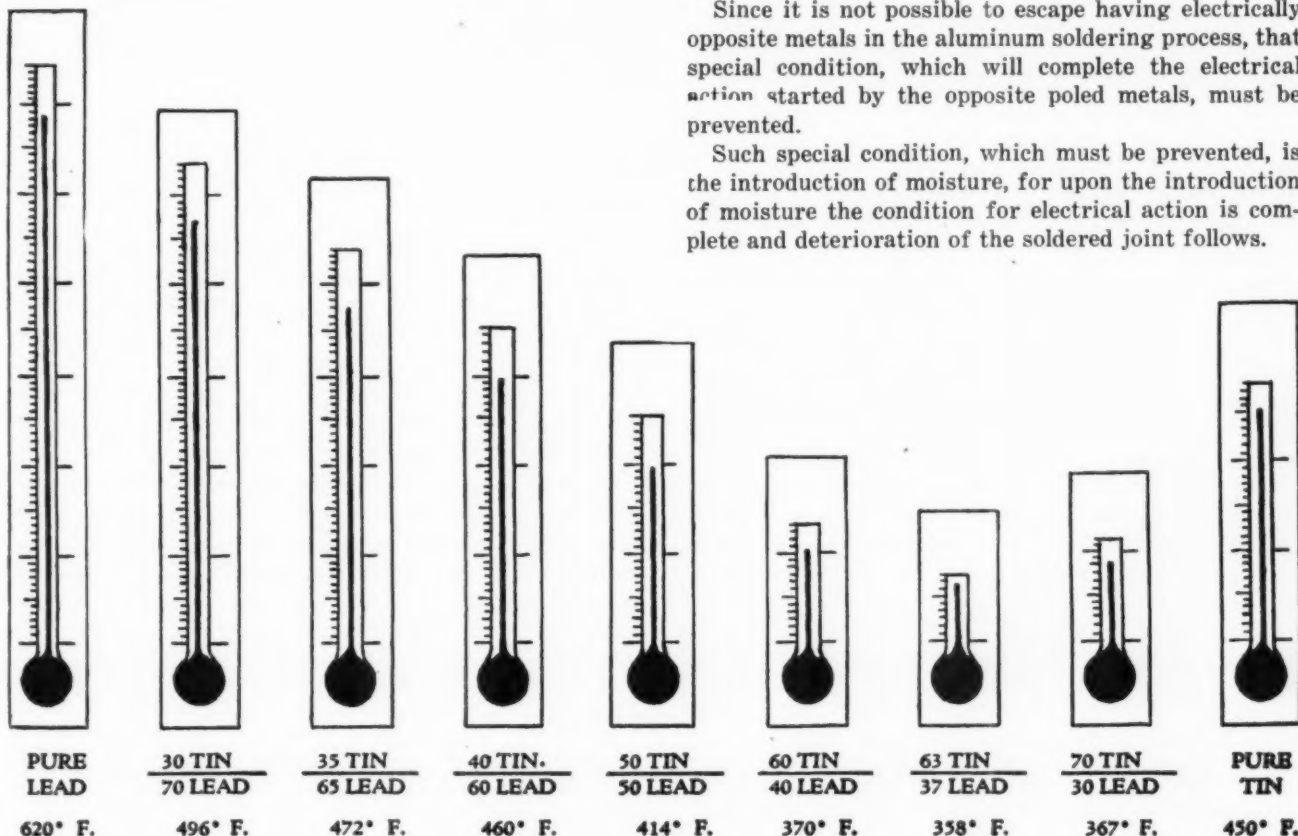
This obstacle has been overcome by making a solder, in which flux is intimately combined, the result being a simultaneous fluxing and soldering operation which is successful.

2. Overcoming the second obstacle

Due to the fact that aluminum is electrically opposite in the presence of other common metals such as tin, lead, etc., the soldering of aluminum brings two electrically opposite metals together. This gives the basis for a voltaic couplet, which, when certain conditions exist, will produce a galvanic action which will, in time, destroy the soldered joint.

Since it is not possible to escape having electrically opposite metals in the aluminum soldering process, that special condition, which will complete the electrical action started by the opposite poled metals, must be prevented.

Such special condition, which must be prevented, is the introduction of moisture, for upon the introduction of moisture the condition for electrical action is complete and deterioration of the soldered joint follows.



In most classes of work, the joint is not subjected to water, or to steam, or other liquids, or vapors. When such is the case the joint will not be attacked.

But where moisture is to be encountered the joint must be protected by a waterproof coat of varnish, paint or the like.

Soldering Process

Before endeavoring to perform the soldering of aluminum it is well to remember the following:

1. Aluminum requires a higher heat for soldering than ordinary metals so that the fluxing and soldering operations may be carried on simultaneously, and a strong, permanent joint produced. This means that a blow torch, blow pipe, or Bunsen burner should be used since the soldering iron does not carry enough heat for the work.

2. Since the fluxing and soldering operation are performed at the same time, the needed flux is incorporated in the solder. Therefore, use no flux—the solder contains its own.

3. Because a successful tinning of the aluminum surface is the key to successful soldering be sure to rub the solder, while in liquid condition thoroughly into the surface of the metal. This insures a good job of tinning.

4. Cautions:

Remember that the soldering of aluminum differs from ordinary soldering. Follow the directions closely.

The process step by step

1. Use sand paper, a file, or some similar means and thoroughly clean the surface to be soldered.

2. Apply no acids or other chemicals. Remember all the flux needed is contained in the solder.

3. A soldering iron will not supply enough heat. Use a blow torch, Bunsen burner, blow pipe or the like.

4. Heat the aluminum to be soldered. Do not allow the bar of aluminum solder to get into the flame. Rub the heated aluminum surface with the aluminum solder. When the aluminum is hot enough the solder will melt upon it. Be sure that it is in thoroughly liquid condition, and then rub it thoroughly into the surface with a narrow piece of wire, the back of an old hacksaw blade, or a brass scratch brush. This rubbing in is essential to a good "tinning" of the surface, and upon the success of the first tinning coat depends the joint.

5. After the piece has been "tinned," melt on enough additional solder to complete the job. If one desires to join the aluminum to another piece, "tin" both pieces as described above. Next add the amount of solder needed to "sweat" the pieces together.

When the pieces are so made ready, place them in the position desired and apply heat until the solder in the joint is perfectly fluid. Now remove the heat and let the solder set, taking great care not to move the pieces until the solder has become entirely solid.

6. Other metals may also be joined to aluminum if they are first "tinned" and the method described above is followed.

Stainless Steel and Similar Alloys

Stainless steels, and similar hard to solder alloys, do not conduct heat as readily as do common metals such

as iron, brass, copper, tin, steel, etc. The stainless steel class of metals are likewise more highly resistant to chemical action than such everyday metals as the above. These two special characteristics must be taken into account in successfully soldering this class of metals.

The first consideration is the poor conductivity of heat. This means that when soldering is being performed that more heat must be used, not so much a higher temperature as a larger source of heat. In terms of the soldering "copper" this means a larger "copper." Very logically when a heavy gauge of stainless steel is employed more heat is required to completely liquify the solder, than would be the case with a lighter gauge.

The second characteristic, high resistance to chemical action, means that a rather active chemical is required to properly react with the resistant metal. This in turn means that extra precautions need to be taken in removing the excess soldering chemical after the soldering operation and, in avoiding the spattering of the soldering flux on the hands, arms, or clothing.

Soldering Process

Place the pieces to be soldered in position. Now brush on the stainless steel soldering flux. Rub lightly with the brush if the flux does not seem to take hold at once. A small brush prevents spreading of the flux over too large an area. Only the surface to be soldered should be fluxed.

Ordinary solder is now applied from the top of a well tinned "iron" of sufficient size for the depth of the joint, and the gauge of the metal. Be sure to use a large enough "iron."

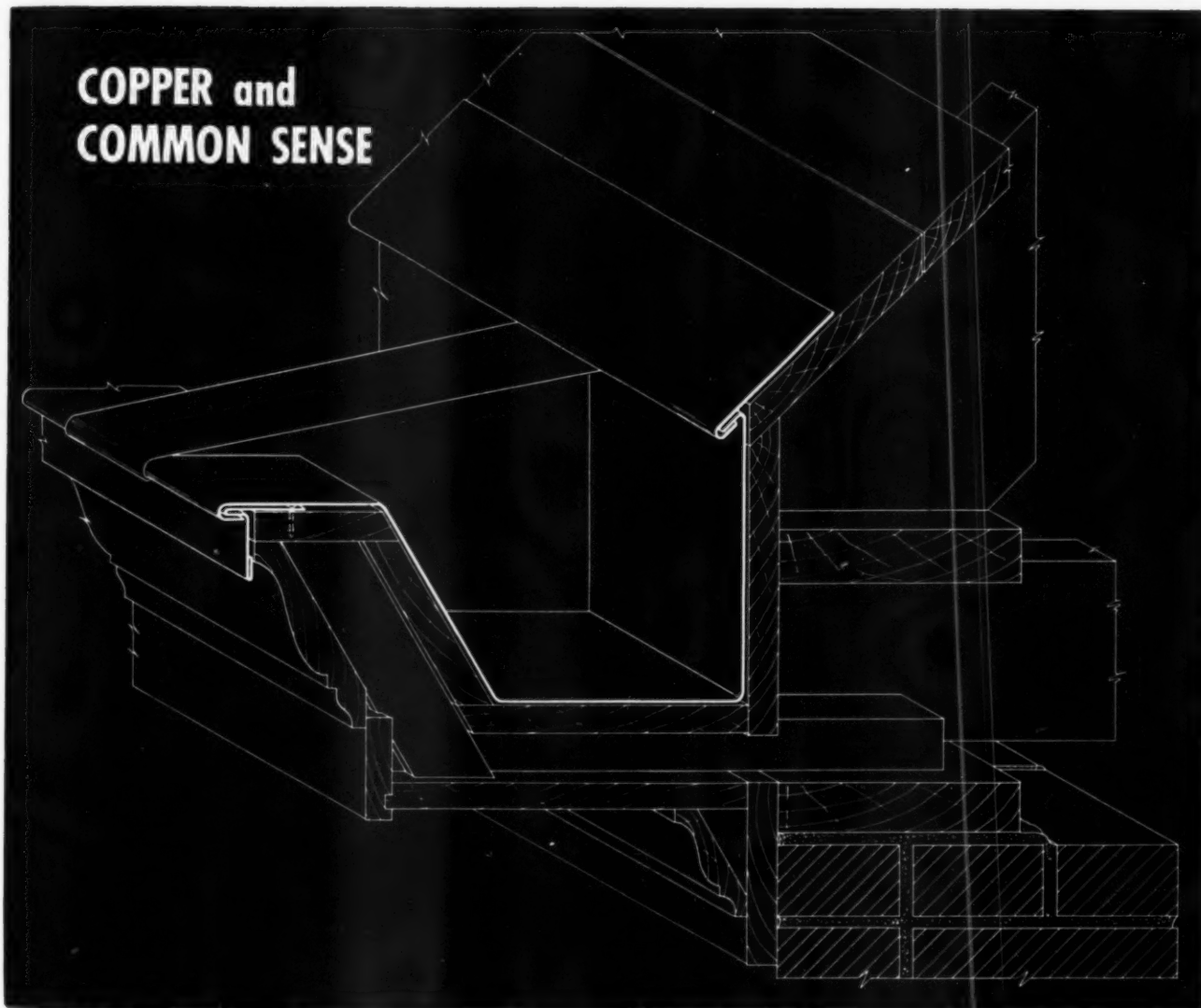
Move the soldering iron along the joint as rapidly as the solder is observed to flow freely into the joint. This will give the proper speed, and prevent going over the joint a second time. If the metal is of heavy gauge, or if the joint is deep it will help to pass the soldering copper along the top of the seam, as well as along the seam itself.

The second characteristic of stainless steels as mentioned before was the high resistance to chemicals making necessary active chemicals in soldering. When the hot soldering copper strikes the stainless steel soldering flux the active chemicals now heated, become doubly active and are sprayed back into the joint in a hot vapor that readily draws the solder into the joint making a tight union with the metal. However, this flux is also sprayed onto adjoining metal.

Consequently, the excess flux must be removed after the soldering operation to prevent unnecessary reaction which tends in time to dull the finish. The removal of this excess flux is accomplished readily by a good wash off with a soap and water saturated cloth, or with a thorough flux of water. Wiping off afterward with a clean cloth is helpful.

Because of the higher resistance of stainless steels a more active flux is needed than for ordinary metals. This means that more irritation to the hands, or arms is caused by getting such flux on them.

COPPER and COMMON SENSE



QUESTION: What is the best way to determine locations of expansion joints in sheet copper construction?

ANSWER: Use the chart on page 28 in "Copper and Common Sense"

A CHART which makes it easy for you to determine the correct gauge copper for any gutter lining as well as the maximum distance that may safely be used between an expansion joint and a fixed point is one of the important results of Revere's extensive sheet copper research program. This chart and simple instructions for using it are on pages 28-29 in Revere's 96-page book, "Copper and Common Sense."

This booklet is filled with new facts which enable you to design or install gutter linings, flashings and roofs that give *extra* years of service. It is complete with charts, illustrations and detailed information so arranged that you can read and apply final figures that insure the finest sheet copper construction.

This book has been widely distributed to architects and sheet metal contractors, and in all prob-

ability it is in your office files. Be sure to refer to it. If you do not have a copy, write for one now on your office letterhead.

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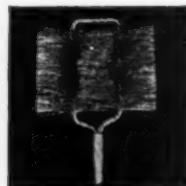
SCHAEFER'S special alloy "Silver Brite" rustproof spring steel wire has been developed for longer wear, more effective cleaning. It offers extra value, extra satisfaction in any brush.



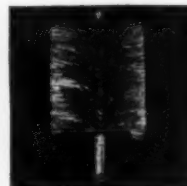
SCHAEFER Rectangular Flue Brushes
No. S-415—2"x4"x4 1/4"
No. S-416—3"x5"x4 1/4"



SCHAEFER Boiler Brushes
No. S-393—1 1/2"x4"x5 1/4"
No. S-394—2 1/2"x6"x6 1/4"
No. S-395—3 1/2"x6"x6 1/4"



SCHAEFER Boiler Brushes
No. S-396—1 1/2"x4"x4 1/4"
No. S-397—2 1/2"x6"x4 1/4"
No. S-398—3 1/2"x6"x6 1/4"
x4 1/4"



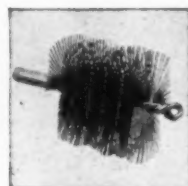
SCHAEFER Boiler Brushes
No. S-399—2"x4"x6"
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No. S-432—Single Spiral—1" to 4" dia.
No. S-433—Double Spiral—1" to 4" dia.
No. S-434—For small Flues, 1/4" to 1" dia.



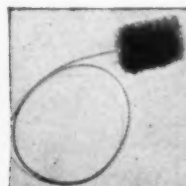
SCHAEFER Round Flue Brushes of Single Spiral, Flat Steel Wire
No. S-430—1" to 4" dia.



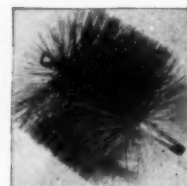
SCHAEFER Rectangular Flue Brushes of Flat Steel Wire—Spiral
No. S-420—2"x3 1/4"x4"
No. S-425—2 1/2"x6 1/4"x7"



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No. S-442—3", 4", 4 1/2", 5", with 8 ft. handle.



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No. S-444-445



SCHAEFER Chimney Cleaning Brushes
No. 66—6", 7", 8", 10" and 12" dia. round style of Black Tempered Brush Wire.
No. 666—6", 7", 8", 10" and 12" dia. oblong style of Flat Tempered Steel Wire.



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No. 276—6" dia. x 1 1/2" face.
No. 278—8" dia. x 1 1/2" face.
No. 280—10" dia. x 2" face.



SCHAEFER Handy Wire Brush
No. 816—For roughing, soldering, etc., 6" long, tempered steel wire trimmed 1 1/4".



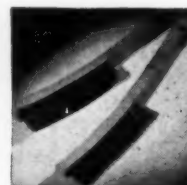
Tin Handle Acid or Dope Brushes
Selected grade bristles in tin ferrule. Widths, 1/2", 3/4", 1".



T. W. Flat Acid Brushes
Tinner's soldering brush, horseshair filling, 1 1/4" width, 7 1/2" overall. Twisted wire handle.



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No. 11—1/2" dia. x 3" brush x 8 1/2" overall.



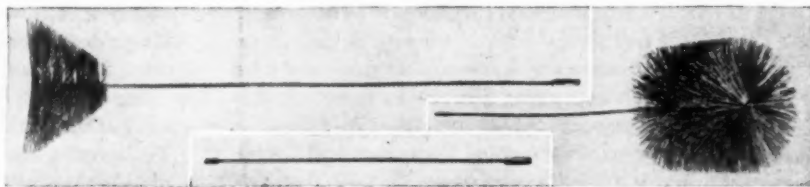
SCHAEFER Curved Handle Wire Brushes
No. 810—Oil tempered steel wire, trimmed 1 1/4", hardwood block, 14" long. Brush 6", 2, 3 or 4 rows.



SCHAEFER Shoe Handle Wire Brushes
No. 812—Oil tempered rustproof wire, 5" brush, 2, 3, 4 rows. Trim 1 1/4", overall 10".



SCHAEFER Straight Back Wire Brushes
No. 800-11—Oil tempered steel wire. Hardwood block, 7 1/2" x 2 1/4". Wire trim, 1 1/4", 6 x 19 rows.



SCHAEFER Vacuum Cleaner Brushes
No. 1005—Bassine Fibre Brush, 10 1/2" dia. tapered to 3" dia. x 6 ft. long—48" handle with threaded nipple at end.
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National Warm Air Heating & Air Conditioning Ass'n June Meeting

Report of the historic two-city mid-year meeting of the Association that saw the dedication of the new Research Residence. At the top of the page is a view of C. T. Burg, luncheon speaker at the Edgewater Beach Hotel, and part of his receptive audience.

THURSDAY and Friday, June 5th and 6th saw the passing of another milestone by the National Warm Air Heating and Air Conditioning Association. The first of the two days saw the June Meeting assembled at the Edgewater Beach Hotel in Chicago for an outstanding program of addresses and reports while the second day marked the dedication of the new Research Residence on the campus of the University of Illinois. This latter event was the culmination of twenty-three years of research, started in the stately, old Residence No. 1 and to be continued and expanded in the modern, up-to-the-minute Residence No. 2.

President Opens Program

Frank E. Mehrings, president of the Association presided at the morning session on Thursday, June 5th and gave his report to the convention. After a welcome to the members in attendance and a word of explanation about the purposes of conventions he went on to discuss the importance of the meeting in view of the fact that the new Residence was to be dedicated and started on its career of service to the warm air heating industry. Next in importance in the program of business was the revision of the Constitution and By-Laws of the Association, in order to bring them up to date and Mr. Mehrings told of the dissolution of the executive committees of the Dealer and Jobber Divisions and the substitution of a plan that saw the appointment of a dealer member and a jobber member to each of the standing committees of the Association. This is intended to result in an increased amount of participation on the part of dealers and jobbers in the workings of the organization. In support of this

action Mr. Mehrings read to the group a letter received from a prominent dealer in which the dealer stated that he felt that it was well worth while for him to maintain his membership in the Association even though there was no longer a dealer division since he knew he was represented on each committee by a dealer.

This man also expressed the belief that the part of the dealer in the industry was such that it was no more than right for him to contribute to the extensive program which the Association has been carrying on for the betterment of the industry.

Next to be discussed was the program of Indoor Comfort Conferences and Mr. Mehrings emphasized the success that had greeted these Conferences but also warned against any belief that they were self-supporting. In fact, the only thing that made the enterprise possible was the subscription of \$109,000 that all classes of members of the Association set up.

Final point covered was a survey made of several furnace manufacturers to obtain their point of view on the demand situation in heating equipment and other phases of business and management and the picture for the coming year seemed to be fairly encouraging to these men.

"What About Oil Heat?"

T. H. Green, special representative of the Eureka Williams Corporation asked the above question and then proceeded to answer it to the eminent satisfaction of all his hearers. He brought out the amazing story of the growth of oil heat in the last two decades and length of time it took the industry to make the

first million oil heat installations (14 years) as against the time that it took to install the second million. (6 years).

Mr. Green sounded a word of warning in regard to this tremendous acceptance of oil heating saying that it would not be possible to coast on past accomplishments but ever continuing improvement in equipment and performance must be an objective of the industry. The idea behind this statement was that it is not practical for the oil heat industry to engineer against the coal shovel but that they must seek to meet the competition of gas, at present suffering difficulties but difficulties which will not last indefinitely.

In delving into merchandising, the speaker stated the belief that the washing machine and other such labor-saving devices had to be really *sold* to the housewife and it took all those new ideas some time to gain public recognition and acceptance. Once this had been secured the path was easy. So it has been with automatic heating. Acceptance has been secured and now performance must live up to advance publicity.



President Frank Mehrings of the Association hands • a symbolic key of the new Research Resident to Dr. Coleman R. Griffith, Provost of the University of Illinois.

"Merchandising Comparisons"

Next on the program was A. T. Atwill, president of the Quaker Manufacturing Company, Chicago, one of the wittiest and most entertaining speakers a convention could ask to hear and his subject was the effective merchandising that is to be found in the space heater field.

He did manage to bring in a plug for the vaporizing, pot-type burner, expressing the belief that in the small, modern home with a small heat loss the vaporizing burner has advantages over the more costly, gun-type burner. He specified the size as being the home that could be heated on a gallon of oil an hour, or less.

Statistics were presented showing the prevalence of the oilburning space heater in modest homes of the lower income bracket and even some larger homes that should be centrally heated. The latter, however, constituted something like one-half of one per cent of the central heating market. Startling was his statement that thirty years ago 51% of the homes of America were stove heated and in this present day of enlightenment 58% of American homes are heated by stoves.

Add to this the fact that only 14 states have more homes heated by central heating plants than by stoves and you have something that should give the exponent of central heating cause to wonder.

The speaker went on to inquire into the causes for this increase in stove heat as well as the decrease in the percentage of the shelter dollar allotted to heating. Formerly as high as 15% had been given to the heating plant but in 1941 it had dropped to as low as 4½%. He attributed this change to better merchandising of plumbing and kitchen equipment, appliances as well as space heaters. Also pointed out was the fact that a person who has experienced automatic, comfortable heat from a space heater will undoubtedly be a prospect for oilfired central heating as his finances improve.

Gas Heating

Raymond Little, general sales manager of the Equitable Gas Company, Pittsburgh, presented an analysis of the gas heating picture as it has been, is now and will be in the future. He traced the development of the gas industry which started as a lighting industry but evolved into one devoted to heating.

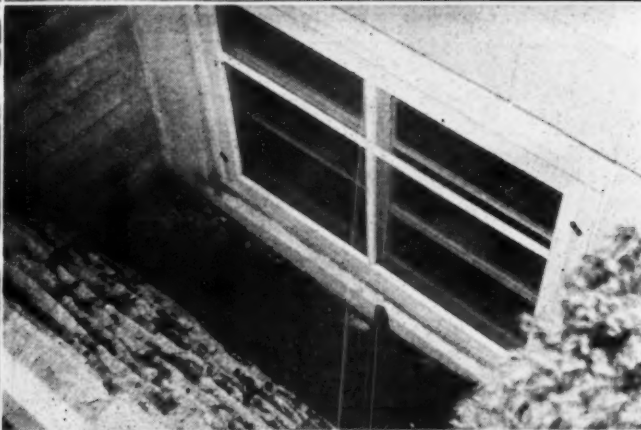
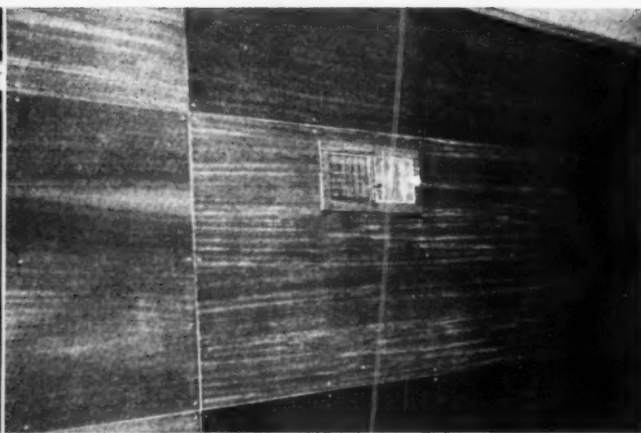
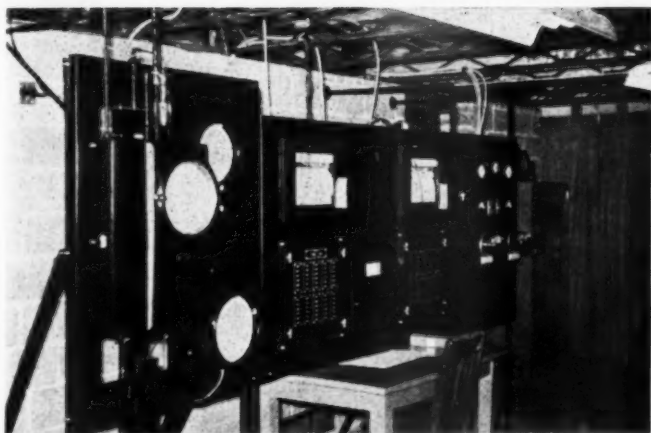
The present restrictions on the installation of gas heat were explained as being necessary from a standpoint of shortage of transportation facilities and not of natural resources since there are proven reserves that will meet the country's needs for years to come. Another development in this regard is the process for producing gas from coal, either burned in the mine or processed in a plant adjacent to the mine.

The speaker dealt with the great increase in popularity that gas heat went through in the last two years and said that the AGA was cognizant of the fact there were many substandard heating devices marketed in that period but the testing agency was so overloaded that it was impossible to pass and approve all the equipment that it was asked to test. This difficulty has been nearly overcome at this point and many of the fly-by-night equipment makers have gone on to other greener pastures so that the situation has just about righted itself.

As a point of information to the audience Mr. Little gave some figures on the number of utilities now placing restrictions on gas heating installations. 56% of the utilities have restrictions on installations and of those 70% allow installations in new homes while 41% permit replacements or conversions in old homes. The speaker held out some hope that the supply problem would be conquered by the 1948 heating season.

Burg Speaks at Luncheon

The luncheon session was marked by an address by C. T. Burg, vice president and general sales manager of the Iron Fireman Mfg. Co., an exponent of the old-time, hell-raising, up-an'-at-'em school of salesmanship. Theme of his talk was that the honeymoon is over and it is time for the industry to get down to realistic merchandising and salesmanship. Coming from a man in the industry as well informed as Mr. Burg this added conviction to a belief that has been held for some time by many people in the field.



Top—The instrument panel in the basement of the Research Residence. All tests are conducted from this point.

Center—A ceiling diffuser in the basement with a good view of the steel beam construction.

Bottom—Professor Fellows beams with pride over his smokeless furnace as visitors ogle it.

Top—The wall construction in the Residence is shown here. The panels are screwed to the joists so that they can be shifted.

Center—A basement window—regular sized movable sash and a well that allows a great deal of light to enter the lower area.

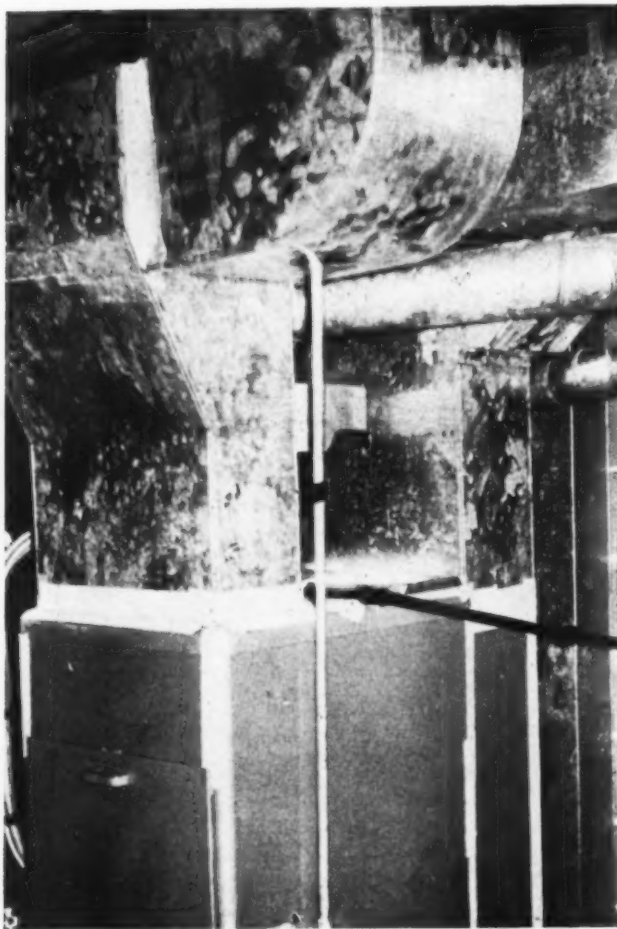
Bottom—One of the guides explains the blower research setup in the Engineering Lab.

Help Your Customers Take the —
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"Panel Heating—Plus"

The afternoon session was opened by J. D. Wilder, editor, *AMERICAN ARTISAN*, who offered one of the first documented talks on panel heating with warm air that has been given to the industry. Tests have been made on several types of closed panels (including a hollow tile floor) and the conclusion arrived at was that the closed panel was incapable of delivering enough heat to maintain comfort conditions in the dwelling. Moreover, it was discovered that the heavy mass of the floor brought up problems of control, due to time lag and override, and the panel picture did not look very cheerful.

But a variation on the warm air panel has been



This shows the initial furnace installation in the new Residence. Provision is made to switch from supplying the conventional system to a ceiling panel. Other brands of furnaces will be tested at a later date.

developed that provides for discharging heated air into the rooms. The warmth that is radiated from the panel plus the warm air that enters the room results in a system that is capable of maintaining temperatures at the proper level and also retains all the benefits of winter air conditioning; air circulation, cleaning, and correct humidification. The control problems have been lessened by this type of installation, too. Slides were shown with the talk that pictured the sev-

eral types of panel construction and gave test results (temperature readings, etc.)

Indoor Comfort Conferences

Guy Voorhees, Application Engineering Director, gave a report to the convention on the progress of the Conferences as of that date. There had been over 2500 attendants at the various schools and the main criticism leveled at the conferences had been, oddly enough, that they were not long enough. Many of those who had participated felt that more time should be devoted to such phases as calculation of heat losses, duct design and design of extended plenums as well as a greater amount of time devoted to general discussion. Continuous blower operation proved to be the most interesting topic at all meetings but panel heating was brought up at nearly every conference, also.

Committee Reports

The reports of the committees followed with George Boeddner giving C. L. Rowley's report on the activities of the publicity committee; W. D. Redrup, chairman of the codes committee, discussing the new Manual No. 9 and F. L. Meyer talking about the new Research Residence, project of the Research Advisory committee he presides over. Professor Lorin Miller announced the next Short Course at Michigan State for March 22-25, 1948. Last event of the day was the cocktail hour, well-attended and appreciated.

Adjournment to Urbana

Friday the convention underwent a record long-distance change in locale since a large group traveled down to the campus of the University of Illinois to witness the dedication of Research Residence #2. Prior to the dedication ceremonies the groups were conducted through the Mechanical Engineering Laboratory to see some of the heating and air conditioning projects such as Blower Research, the Smokeless Furnace, Air Conditioning Apparatus, the "Cold" Room and the Fittings Study.

Luncheon was served in the ballroom of the Union Building and the dedication ceremonies were held there, due to the conditions of the ground around the Residence as a result of the rains the night before.

President Frank Mehrings made an address giving some of the background in the cooperation between the University and the Association for purposes of research. He spoke of the history of the first Residence and told how changes in style of home construction had made it necessary to build the new Residence to make the tests more accurate for the present-day home.

Dr. Coleman R. Griffith, Provost of the University accepted the symbolic key to the Residence on behalf of the University and praised the alertness of the Association in providing for a continuing program of research that would meet and solve the problems encountered in heating the homes of America. The Association has seen to it that as home-building progressed home-heating has also progressed.

After the ceremonies the groups inspected the new Residence and toured the campus of the university and then entrained back to Chicago.

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Meet sales competition with the line that offers
more sales opportunities at lower installation outlay!

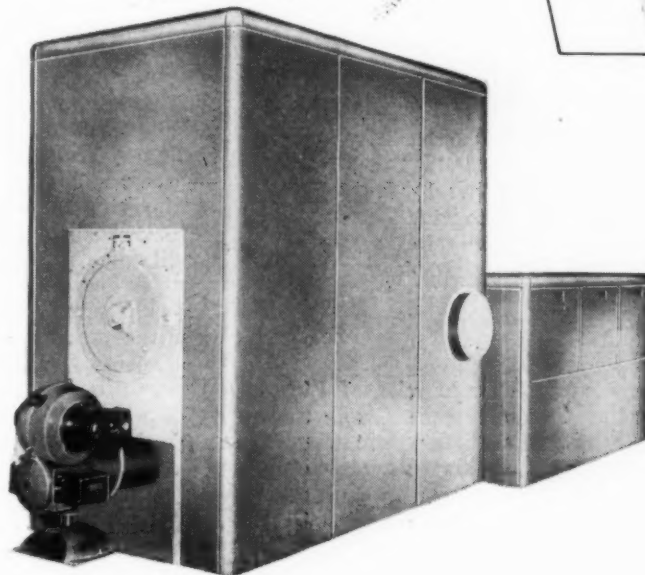
Standardize on J & C equipment and build up
your satisfied customer register.

Note: Do not overlook the possibilities of J & C
units for drying or processing.

THE J & C LINE*

MODEL	Btu @ BONNET
G2-70	52,500
OL3-85	85,000
G5-130	104,000
AL590	106,000
MF15	120,000
CO150	130,000
CO195	195,000
MF30	240,000
MF48	350,000
MF63	500,000
MF1000	800,000
CC2500	2,000,000
CC4750	3,800,000

*Above are representative models in the
J & C line that includes more than 100
types and sizes.



A PRODUCT OF



JACKSON & CHURCH COMPANY • SAGINAW, MICHIGAN

WORK WELL DONE SINCE '81





Newly elected Florida officers for 1947-1948.
Left to right: John Jiretz, Jr., 3rd vice-president; Wm. N. Palmer, 2nd vice-president; George Ferber, president; John C. Caldwell, secretary-treasurer; S. L. Boyett, 1st vice-president
Below: The Florida convention Banquet



The Florida Convention

MORE than one hundred and fifty members and their wives attended the convention of The Roofing and Sheet Metal Contractors Association of Florida, held in Tampa, April 25-26: many thanks to the convention committee, headed by John Jiretz Jr. Jacksonville will be the convention city for 1948.

NEW OFFICERS

George Ferber, president, Jacksonville
S. L. Boyett, 1st vice-president, St. Petersburg
Wm. N. Palmer, 2nd vice-president, Miami
John Jiretz Jr., 3rd vice-president, Tampa
John C. Caldwell, secretary-treasurer, Orlando

DIRECTORS

J. D. Arnett, Saint Augustine
Howard Carpenter, West Palm Beach
H. M. Force, Daytona Beach
Mack Fillingham, Jacksonville
John A. Gross, West Palm Beach
J. M. Montgomery, Coral Gables
O. J. Nettles, Tallahassee
Frank Tack, Clearwater
J. A. Tucker, Ocala

According to the Associated Industries of Florida, bills dealing with the Unemployment Compensation and Workmen's Compensation finally came up for action and every one of these bills was passed by a substantial majority.

Ellard Kohn, 550 North West Seventh Street, Miami, has some Hauck roofing kettles to sell; also an eight-foot wood truss sheet metal brake. He needs a 36-inch bar folder. So if anyone in the state needs what he has or has what he needs, please get in touch with him.

John C. Caldwell, Sec'ty-Treasurer.

Los Angeles

THE final meeting of the Institute of Gas Heating Industries of Los Angeles prior to a two month's vacation period was called to order by President C. A. Gabriel at Eaton's Restaurant on June 12.

Chairman Art Theobald of the Education Committee reported on the Long Term Course now being worked out by the Engineering Department of U.C.L.A.

President Gabriel spoke briefly on the Code of Ethics for the Institute and pointed out that a suggested code—copies of which had been inclosed with the invitation for the evening meeting—was the result of considerable pains-taking work on the part of the Committee on Ethics, headed by Joe Wilson.

Eugene J. Grau made a motion that the Institute go on record requesting that the Department of Heating & Ventilating of the City of Los Angeles require a State contractor's license by all applicants prior to applying for a contractor's city license.

Art Theobald's talk scheduled on "Standardizing of Sizing Charts" was given by A. B. Banowsky.

A heating survey and calculation sheet with charts which was published in pad form several years ago by the Southern California Gas Company was distributed gratis by H. M. L'Haver of that company. This form and its application was the basis of Mr. Banowsky's discourse. Actual examples were worked out by the membership present and uniform results obtained.

A. B. Wicks, Heating Inspector, City of Los Angeles, briefly explained that although the City Sizing and Heat Loss Forms were different, the correct result was all his department required, and the method under discussion would be equally acceptable to the City. Mr. Wicks announced that where floor furnaces and wall heaters were being considered, his department would accept as heat loss requirements the result obtained by multiplying the cubical contents of room by ten.

The Honeymoon is Over!

WIDER CHOICE

OF MODELS! The Fluid Heat line is really complete, includes both wall-flame rotary and pressure burners. That makes it easier to satisfy more customers—make more sales—sign up more contracts—build greater fuel oil volume.

WELL-KNOWN

TRADEMARK! Since the beginning of oil heating, the Fluid Heat trademark has meant well-designed and well-constructed units, known and trusted by American consumers.

SOUND

ENGINEERING! Fluid Heat specializes in sound engineering and construction, not spectacular gadgets. Besides giving you a strong selling point, this reduces your service problems to a minimum.

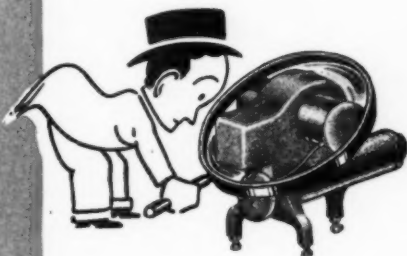
UP-TO-DATE

PRODUCTS! Fluid Heat's top-notch development laboratory, headed by engineers long experienced in the industry, keeps Fluid Heat Products the last word in design and ahead of competition.

PRICED RIGHT

FOR EVERY NEED! Fluid Heat Products are priced for customers in every field, from small homes to commercial installations. This sound, competitive price structure is built on savings effected in manufacturing methods, not in materials or workmanship.

***YOU NEED THESE
FEATURES TO SELL
TODAY'S BUYERS***



**That's why Fuel Oil Jobbers are
Lining Up with FLUID HEAT!**

The "easy selling" days are gone! More and more, your customers will take a *long, hard look* at quality before buying. Are you ready for this switch to a buyers' market?

YOU CAN BE READY . . .

if you line up now with Fluid Heat! Here's a Company with years of steady, successful selling behind it! Here's a Company that long ago selected fuel oil jobbers as the *right* outlet for selling completely automatic oil heat! Here's a Company that gives you plenty of sales features . . . **PLUS** the assistance of an active, experienced field force and a friendly dealer policy!

Getting your share of the oil burner business and increasing your fuel oil sales depends on immediate action! Don't delay! **WRITE TODAY** for full details on a Fluid Heat Dealer Franchise and your private showing of our program for increasing fuel oil volume. Address: **FLUID HEAT DIV., Anchor Post Products, Inc., 6720 Eastern Ave., Baltimore 24, Md.**

fluid heat
OIL BURNER

"WORLD'S ECONOMY CHAMPION"

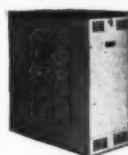
Manufactured by Anchor Post Products, Inc.
Baltimore, Md., Established 1892



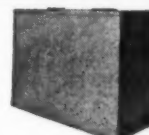
4 Pressure Burners
Firing Rates from 7/10 to
12 gallons per hour



2 Wall Flame Rotary Models
Firing Rates from 1/2 to 5 1/2
gallons per hour



3 Boiler Burner Units
Capacities from 475 to 840
sq. ft. of standing hot water



2 Air Conditioning Furnaces
From 85,000 to 120,000
B.T.U. per hour

ASSOCIATION ACTIVITIES



New York City

THE Roofing and Sheet Metal Crafts Institute conducted an interesting symposium on Cost-Plus billing at its meeting early in May, in line with its policy of holding forums on specific subjects as part of its meetings. The subject drew a great deal of interest inasmuch as these discussions may eventually lead to the establishment of a standardized method of billing.

Indoor Comfort Conferences

TWO more of the heating engineering schools of the National Warm Air Heating and Air Conditioning Association (Indoor Comfort Conferences) are scheduled, as follows:

Duluth, Minnesota.....July 28, 29 and 30
Denver, Colorado.....August 18 and 19

Local chairman for Duluth is John P. Nelson of Kelley-How-Thomson Company, 309 South Fifth Ave., Duluth, and for Denver, J. H. Singleton, C. A. Crosta, Inc., 1830 Market St., Denver 2.

The Saginaw, Michigan, conference is being held July 14 and 15.

Previously 27 of these conferences have been held, with a total attendance of about 2,700 men. Benefit of these schools to the industry as a whole will be in almost direct proportion to the number of dealers attending, since in the final analysis, it is the dealer who serves as the industry's contact with the consumer.

Those interested should contact the local chairman to secure detailed information and reservation blanks. The tuition fee is \$10 per person for association members and their employees, and \$15 per person for non-members.—R. J. Waalkes, Asst. of Man. Director.

St. Louis

THE Warm Air Indoor Comfort Conference held in St. Louis on May 5 and 6, 1947, was a success in every sense of the word. The meeting was held at the Kingsway Hotel in the west end of St. Louis and started promptly Monday morning at 9:00 o'clock.

The attendance was 108 consisting of 105 dealers and jobber salesmen and three guests. (The members of the Smoke Commissioner's Office of the City of St. Louis.)

Some of the dealers traveled from Urbana, Danville and Metropolis, Illinois, and some came as far from St. Louis as Slater, Sikeston, Columbia and Washington, Missouri.

The first day was spent on Btu heat loss and the slide film of Comfort College.

The Monday evening meeting finished off the Btu heat loss for the forced air job, and showed the boys how to convert it into Btu for the gravity method of figuring.

Tuesday morning and afternoon meetings dealt with balancing a unit, figuring heat values of different wall constructions, and balancing and adjusting a unit, as well as placement of registers and return air faces for the maximum amount of comfort.

Eighteen of the dealers in attendance were also visitors at the Conference held last year, and all congratulated the Association on the splendid job they did on improving the technique of presentation through the use of the magic blackboard and the slide film.

The St. Louis jobbers and Manufacturers Association feels confident that if a convention similar to that held by Michigan State University can not be held in St. Louis at one of the universities, the 1948 conference will be a sell out.



The St. Louis Warm Air Indoor Comfort Conference

Specify **ANEMOSTAT**

**DRAFTLESS AIR-DIFFUSION for an
air-conditioning job
you'll be proud of!**



The best "advertising" for functional-minded architects, engineers and contractors is the excellence of their own craftsmanship . . . represented by modern structures that make living and working more pleasant. That is why they invariably regard an air-conditioning installation with Anemostat draftless air-diffusion as a job well done. A job that advertises them. A job to be proud of!

Anemostat takes the "raw materials" of air-conditioning and actually "processes" them into COMFORT. There are no draft-producing grilles or registers, for Anemostat air-diffusers distribute the conditioned air in pre-determined, controlled patterns. Result: there are

no drafts . . . no dead air pockets . . . room temperature and humidity are equalized throughout.

Because Anemostat wall or ceiling diffusers permit employment of stepped-up duct velocities and greater temperature differentials, duct sizes and duct outlets may be reduced — an important economy feature. Because Anemostats have no moving parts to wear out, maintenance cost is nil.

Thousands of Anemostat installations throughout the country — in virtually every industry — are putting new comfort into air-conditioning. So, remember to specify Anemostat draftless air-diffusion for an air-conditioning job you'll be proud of!

HOW ANEMOSTATS COMPLETE AIR-CONDITIONING

The patented Anemostat distributes air — of any duct velocity — in all directions and in a multiplicity of planes. Simultaneously, counter-currents created by the device siphon into the Anemostat room-air equal to about 35 per cent of the volume of the supply air. This room-air is mixed with the supply-air within the diffuser before the air-mixture is discharged into the room. Furthermore, velocity of the incoming air is instantly reduced within the Anemostat by air-expansion.

In this way, the Anemostat noiselessly diffuses air of any duct velocity throughout the entire room . . . eliminates drafts . . . closely equalizes temperature and humidity . . . prevents air-stratification. There is no substitute for Anemostat air-diffusion!

Write for
Information.

ANEMOSTAT

REG. U. S. PAT. OFF.

ANEMOSTAT CORPORATION OF AMERICA
10 East 39th Street, New York 16, N. Y.

REPRESENTATIVES IN PRINCIPAL CITIES

**"NO AIR-CONDITIONING SYSTEM IS
BETTER THAN ITS AIR DISTRIBUTION"**

AD-1117

Association Activities . . .

Rochester

AT the regular meeting of the Master Sheet Metal, Furnace and Roofers' Association of Rochester, New York, on Monday, May 19, the following officers and directors were elected:

President Albert Vonhof
Vice-President Herb Hillberg
Secretary Richard W. Friday
Treasurer Frank Redeker

Board of Directors

Harry Fitch Jan Betlem
Frank Siebert Burton Stevens
Elmer Davis

A committee was appointed to plan the annual cruise to Cobourg, for both members of the association and the Merchandisers.

Richard W. Friday, Secretary.

Stoker Manufacturers

THE 30th annual meeting of the Stoker Manufacturers Association was held at Lookout Mountain, Tennessee, on June 16, 17 and 19. The merchandising of automatic coal stoker equipment, new applications of electronic controls, the competitive fuel situation, the supply of coal for stoker application, and public relations were among the many subjects covered.

Officers elected for the ensuing year are:

George W. Graham, president, Eddy Stoker Corporation, Chicago
Claude A. Potts, vice president, U. S. Machine Corporation, Lebanon, Ind.
F. H. Herndon, secretary-treasurer, Link-Belt Company, Chicago
Marc G. Bluth, executive secretary.

New Directors elected are:

A. O. Dady, David Bradley Mfg. Works, Bradley, Illinois
Frank Hoke, Holcomb & Hoke Manufacturing Company, Indianapolis

Other directors are:

Walter Sormane, Conco Engineering Works
George W. Graham, Eddy Stoker Corporation
J. M. McClintock, Illinois Iron & Bolt Co.
C. T. Burg, Iron Fireman Manufacturing Co.
F. H. Herndon, Link-Belt Company
H. E. Sill, Muncie Gear Works
Claude A. Potts, U. S. Machine Corporation.

One of the outstanding features of the three-day meeting at Lookout Mountain was the First Annual Technical Conference, sponsored and conducted by the Association's Engineering and Research Conference, and participated in by the representatives of the coal and allied industries.

135 delegates, representing stoker manufacturing firms, allied supplier firms, and allied industries, attended the meeting. Claude A. Potts served as general chairman of the meeting and was assisted by Frank Hoke on program and Charles Cochran on entertainment. The convention ended with the annual dinner, with C. T. Burg of Cleveland acting as toastmaster. Certificates of Appreciation for Services Rendered the Association, signed by members, along with beautiful and appropriate gifts were awarded to retiring President Walter Sormane and retiring Chairman of the Engineering and Research Committee, A. O. Dady.

At a meeting of the newly elected members of the

Board it was decided to hold a Membership Conference late next October or early November, probably in Chicago.

Canadian NWAH&ACA

THE Canadian Chapter of the National Warm Air Heating and Air Conditioning Association has made available its newly designed emblem, featuring the "Indoor Comfort" oval, to over three hundred and fifty associate members.

Of a total association of 350 jobbers and dealers, some three hundred individuals have attended four-day engineering schools this year.

The seventh engineering school was held at Amherst, N. S., April 28th through May 1st. Forty-two associate members attended when Fred Rand, past president of the Canadian Chapter, officially opened the school. The first two days were devoted to the determination of building heat loss values and the completion of gravity warm air heating layouts, the remaining two days being spent on forced warm air heating theory and practice. Each of these sections of the course was followed by a written questionnaire. In addition, each delegate was required to demonstrate his skill at laying out a typical heating system, both gravity and forced warm air. All of the work was based on the association codes and manuals. Certificates will be issued to successful delegates. The local committee in charge of the arrangements for the school consisted of F. R. Rand, C. D. Hart and R. M. Whynacht. Lectures were under the supervision of Fred Taylor, chapter engineer, assisted by A. G. Baxter and N. Etter.

The Canadian Chapter has published a table of outdoor design temperatures for heating estimates. Figures given are not the lowest temperatures recorded in each locality, but are based on an analysis of meteorological data, such as:

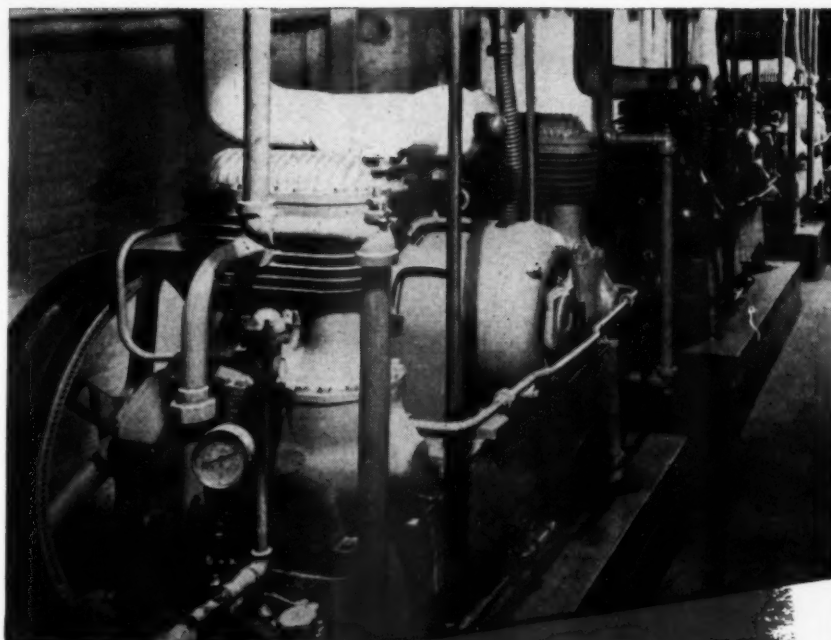
Lowest temperature on record
Average annual lowest temperature
Snowfall, inches per year
Wind, miles per hour

The table was developed by the Technical Advisory Committee of the Chapter in conjunction with the Chapter engineer and has been issued to all members and associate members with the suggestion that it be pasted to page 5 of Manual No. 3: "Measuring Heat Losses." The further suggestion is made that a note should be applied to the outside design temperatures in Manuals No. 5 (Gravity Warm Air Code and Manual) and 7 (Forced Warm Air Code and Manual) to the effect that the revised table in Manual 3 should be used in all future heating estimates. Additional copies may be obtained from the chapter offices, Royal Bank Bldg., Yonge at Deloraine, Toronto 12, Ont.

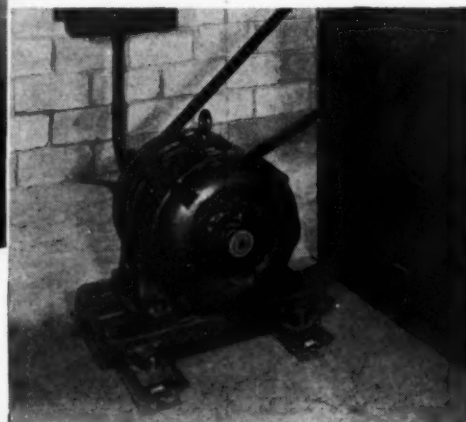
Obituaries

Blount L. Schlemmer of 214 South Buffalo St., Warsaw, Indiana, first vice president of Sheet Metal and Warm Air Heating Contractors Association of Indiana, Inc., passed away June 4, 1947.

John W. Bushell, Sr., 84, president of J. W. Bushell Co., roofing and sheet metal contractors, Peoria, Illinois, died on June 8. Surviving are his wife, seven daughters and two sons—John W. Bushell, Jr., and Howard Bushell, both of Peoria. One of Mr. Bushell's daughters is the wife of Frank I. Eynatten, treasurer of the Illinois Sheet Metal Contractors Association.



High torque of these 25 horsepower Century SCH motors easily starts these compressors.



Century 30 horsepower SC motor provides quiet operation, smooth acceleration on this air conditioning blower.

The Century Line OF Air Conditioning Motors

**Assures Quiet Starting—Smooth
Acceleration—for Refrigeration •
Pumps • Fans • Blowers • Heating Equipment**

Whatever your electric motor requirements, there is a Century motor correctly engineered and properly protected to assure economical power.

For instance, Century Type SCH motors provide the high torque necessary to start heavy loads such as large refrigeration compressors. Because Century Type SC motors for blowers, fans and unit heaters start quietly and accelerate smoothly, they contribute greatly to the comfort of air heating and cooling installations.

When your applications require protection, remember that Century motors are built with splashproof, totally enclosed fan cooled and explosion proof as well as open rated drip proof frames.

Century builds a complete line of fractional and integral horsepower electric motors in the popular sizes to meet the requirements of industrial production, commercial and appliance needs.

Specify Century for all your electric power requirements.



CENTURY ELECTRIC COMPANY

1806 Pine Street, St. Louis 3, Missouri

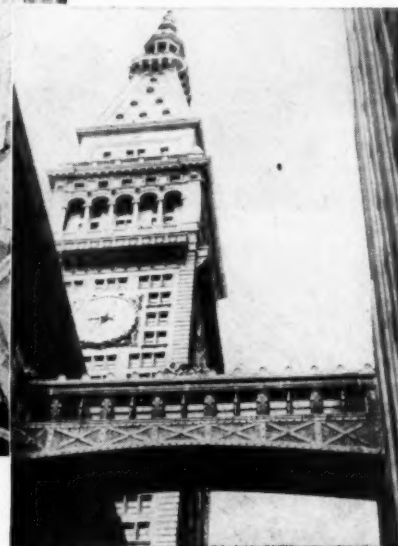
Offices and Stock Points in Principal Cities

547



Anaconda 20-oz. Sheet Copper being removed from the Metropolitan Life Insurance Company bridge at Madison Square, New York. Nicholson & Galloway, Inc., of New York, who installed the copper in 1920, found the metal re-usable. The firm of Nicholson & Galloway, founded in 1849, has done many of the outstanding copper jobs in New York City and its suburbs.

The relocated bridge—with the famous Metropolitan Life Insurance Company tower in the background.



ON NEW YORK'S SKYLINE FOR 26 YEARS

Anaconda Copper Sheathing re-used on famous footbridge

THE 6,000 lbs. of Anaconda 20-oz. Cold-rolled Sheet Copper, covering the footbridge connecting the main building and annex of the Metropolitan Life Insurance Company, had been exposed to the moist, corrosive atmosphere of Manhattan Island for more than a quarter century.

The copper had acquired a natural, soft green patina—protecting it from corrosion. Since its installation in 1920 the amount spent for the upkeep of the bridge's copper exterior had been practically nil, according to a maintenance engineer for the buildings.

In 1946, the annex was razed to make way for new construction. At that time, the span was relocated to connect the head offices with another

Metropolitan structure. Inspection showed the copper to be in such excellent condition that it was carefully removed and used to cover the new, relocated bridge—proving, once more, the durability and economy of well-designed copper work. 47100



Anaconda
SHEET COPPER

THE AMERICAN BRASS COMPANY

General Offices: Waterbury 88, Connecticut

Subsidiary of Anaconda Copper Mining Company

In Canada: ANACONDA AMERICAN BRASS LTD.
New Toronto, Ont.

Equipment Developments

For your convenience a number has been assigned to each item. Circle the items in which you are interested on the coupon on page 126 and mail to us.

△ Indicates manufacturer not listed in 1947 Directory.

• Indicates type of product not listed in 1947 Directory.

△ 84—Aluminum Solder

The Lenk Mfg. Company, Newton Lower Falls 62, Mass., offers Lenk's Super aluminum solder with

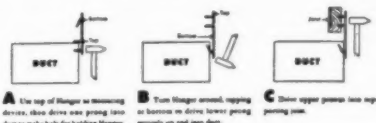


high tensile strength, low melting point, and requiring no acid of flux.

Lenk's Super Aluminum solders aluminum to aluminum and to any metal that can be soldered.

△ 85—Duct Hanger

A. M. Hexdall Co., Morris, Illinois, has designed a duct hanger requiring only pliers, screwdriver and hammer. The Hexdall duct



hanger is 5 by 1/2 in. with right angle prongs at top, one specially-curved prong at bottom, and are made of 16-ga. steel to provide rigid support and flexible enough to be bent easily with pliers.

△ 86—Drill Bits

Rotary Concrete Drill Co., 650 Arroyo Parkway, Pasadena 2, Calif., announces a series of drill bits for boring holes in concrete,



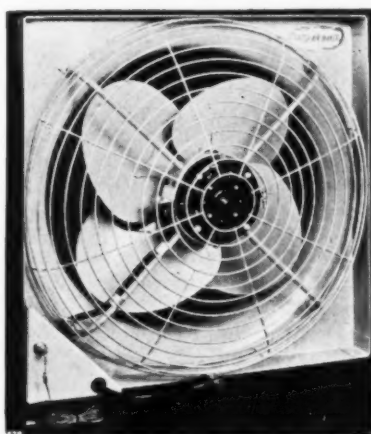
tile, brick or marble, for use in any standard automatic drill.

Diamond dressed cutting tips are set in the blunt end of the bit at the correct angle to give most efficient use.

at the proper cutting angle in the outside rim of the bits 3/4 in. or larger. Bits smaller than 3/4 in. have three cutters.

87—Fresh Air Maker

Schwitzer - Cummins Company, 1145 East 22nd Street, Indianapolis 7, Indiana, has added three



sizes to their Fresh-Air-Maker line—12, 16 and 20-in. models of three-speed exhaust fans, with very quiet operation at all three speeds—for home, factory or store.

88—Weldwheels

Lau Blower Company, 2005 Home Avenue, Dayton 7, Ohio, announces an all-welded blower wheel, providing greater volume of air at higher pressures per horse power.

Individual blades are deeper and have better curvature and pitch than on the old-style wheels, plus



an increased number of blades. Other advantages are a 25 per cent reduction in weight and increased strength.

The Weldwheel is made in 5, 6 1/4 and 7 1/2 in. diameters. Width may be as narrow as 1 1/8 in. Capacities from 50 to 600 cfm. Standard hubs or hubs for Lovejoy or Guardian couplings may be specified.

89—Control AF-500

Sampsel Time Control, Inc., Spring Valley, Ill., announces a new combined fan and limit warm air control, eliminating the necessity of two separate controls with their respective separate mountings. This unit performs the function of both a temperature limiting control and a blower (or fan) temperature operating control.

The electrical rating is 1/2 hp-115 V. a. c.; Type RI motor 15A-115 V., 7A-230 V., alternating current. The limit settings are adjustable on a scale ranging from 100 to 375 deg. F. and the fan settings are adjustable from 100 to 300 deg. F. with adjustable differential settings on both limit and fan.

• 90—Impact Tool

Ingersoll-Rand Company, 11 Broadway, New York 4, announces a new universal electric, all-purpose Impact Tool. Using standard attachments, it will apply and remove



remove screws, drive and remove studs, extract broken cap screws and studs, run wire brushes, do hole saw work, drill brick and masonry and drive wood augers.

This size 4U weighs only 6 1/2 lbs., has an over-all length of 10 1/2 in., a free speed of 2000 rpm, and delivers 1900 rotary impacts per minute under load. It is powered with a specially designed reversible, universal, electric motor (3 amp.) that operates on 110 Volts, AC-DC current.

Equipment Developments.....

For your convenience in obtaining information regarding these items, use the coupon on page 126.

• 91—Diffusion Louver

American Metal Products Company, Sylvania Station, P. O. Box 7037, Fort Worth 9, Texas, announces the Marsalis air diffusion



louver in two sizes—16 and 18-inch diameters. The diffusion louvers are mounted on Neoprene lined shafts, firmly set in the orifice ring and grille, and are finished in pearl gray wrinkle paint.

92—Sno Breze

The Palmer Manufacturing Corporation, 7005 W. Jefferson St., Phoenix, Arizona, announces the production of a new large size Sno Breze evaporative cooler, "Super" fan model S 3000, designed for small plants, offices, homes, motels, tourist courts and house trailers.

Outstanding features of the "Super" Fan Model include water

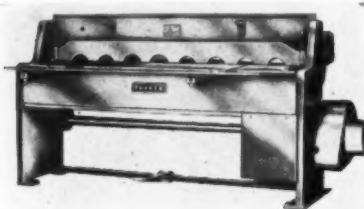


regulating valve and switch; a press-formed rust-proof cabinet with quick change filter pad louvres; a clog-proof adjustable trough drip system; a rust-proof regulating water meter; a recessed adjustable air grill (patent pending).

Powered by a deep pitch, slow speed fan with a heavy duty motor, the model delivers approximately 3000 cfm. The over-all size is 32 in. high by 28 in. wide by 28 in. deep. It can be mounted in the window or on the outer wall.

93—Power Shear

Parker Manufacturing Company, 2200 Colorado Av., Santa Monica, California, is producing a new 10-gauge power squaring shear. Designed by Harold Verson, the new Parker shears are built for extra-heavy all steel welded plate. Parts are normalized after welding to relieve stresses. Bed, ram, hold down

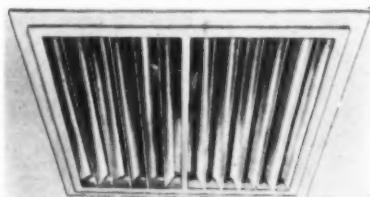


and working parts are powerfully reinforced. Compact, box type design with a low center of gravity for minimum vibration, Parker Shears stand only 47 in. high and weigh 4250 lbs. Five h.p. motor, 85 strokes per minute, cutting length 73 in., blade length 75 in., back gauge range 18 in., front gauge range 38 in., floor space 32 in. x 104 in., are highlights.

Oil hardened tool steel four-edged blades are standard equipment. Drawn or folded parts may be cut to within 1½ in. of their shoulder allowing a close trim on basins, sinks, cowlings etc.

• 94—Air-Changer

Eagle-Picher Sales Company, American Building, Cincinnati 1, Ohio, has developed the "Air Changer" recommended for basement installation, but adaptable for



kitchen floor or attic ceiling. The heaviest section of the aluminum construction air changer weighs 50 pounds. Diameter is 36 inches. Unwanted air infiltration is eliminated by an automatically louvred grill of aluminum.

Adjusting window openings determines degree of ventilation.



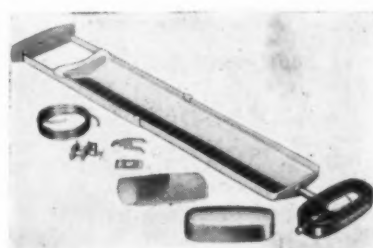
95—Thermostat—T2266

Sampsel Time Control Inc., Spring Valley, Illinois, announces a new heavy duty line voltage thermostat, designed for simple thermostatic control of unit heaters, electric wall heaters and furnaces or where heavier electrical rating than the standard S-26 (1300 watts) is needed.

This thermostat has an electrical rating of 2000 watts, 115 volts A.C.; 60-cycle single-phase, non-inductive load, or ½ hp; 115 Volts A.C.; repulsion induction motor. The range is 50-90 deg. F., with a 2 deg. normal differential.

96—Model 1920

Viking Air Conditioning Corporation, 5600 Walworth Av., Cleveland 2, is putting on the market a new Model 1920 Viking humidifier intended primarily for forced warm air heating systems,



consisting of an all copper evaporator pan 20 in. long, equipped with eight or more fibreglas evaporator plates.

The water supply is controlled by a Viking top seat float valve located outside of the furnace in a separate copper tank. The pan is supported by a sliding bracket adjustable to various lengths of plenums or bonnets.

The humidifier comes completely assembled, ready to install, with instructions, illustrations, as well as installation templates.

FRANCHISED DISTRIBUTORSHIPS NOW AVAILABLE

**Here's your opportunity to sell the complete
Heatway appliance line in an exclusive
protected territory!**

THE coupon on the bottom of this page may be the real chance you've been waiting for. A chance to build a solid money-making future around a big profitable line of heating products that you, *and you alone*, can distribute throughout a large protected territory!

Heatway is the brand that stands for new engineering design, better product features, smart styling, aggressive promotion and advertising...and millions of dollars in factory and production facilities.

A Heatway franchise gives you a complete line of heating products from one giant source. You get warm air furnaces, stokers, winter air conditioners, console heaters,

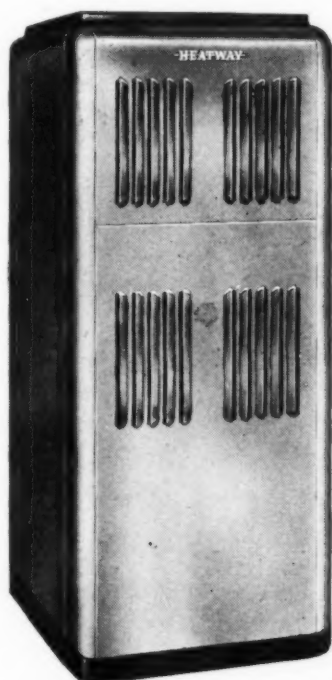
floor furnaces, oil burners, blowers and filters—in *all* sizes, for all fuels!

You can order assortments of merchandise and get a 5% discount on every carload lot. Because you purchase from *one source*, you get this big, easy margin.

You get national advertising support that pays off in local sales...and you get an additional 2% advertising allowance on earned invoices.

You can attract dealers with the Heatway Floor-Finance plan that permits them to stock a full line of appliances with only a 10% cash investment.

Yes—we have a great proposition for the right men. Let's discuss it. Just mail the coupon today.



HEATWAY Automatic Warm Air Conditioner

We hired a famous industrial designer to style it. We had research engineers knock out all the "bugs". We tested it in the field against service and installation headaches. We put it on mass production lines that can turn it out as fast as you want, *as many as you want*. That's the story behind this and every Heatway product for every home, every fuel!



HEATWAY

Home Heating Appliances

HEATWAY

Dept. H-A6, 20 West 43rd St.
New York 18, N. Y.

I'll listen to your proposition.
No obligation, of course.

Name _____

Firm _____

Address _____

City _____ State _____

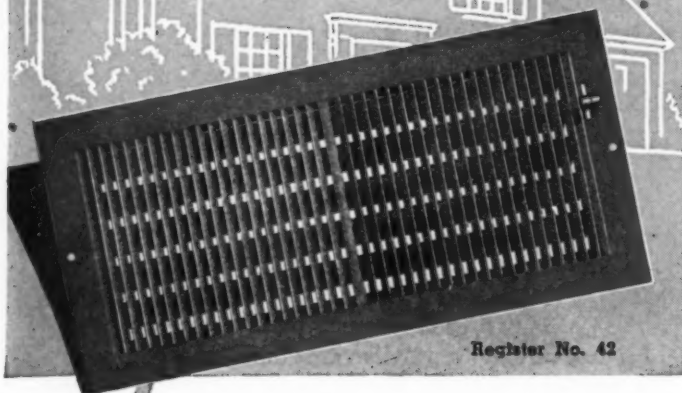
INSTALL

MULTI-CONTROL



PLIAVANE REGISTERS

FOR **BETTER** CONTROL OF AIR CONDITIONING DISTRIBUTION



Register No. 42

When you recommend and install Tuttle & Bailey Pliavane Registers for the control of air flow in residential air conditioning, you can be sure you are offering equipment that meets every distribution requirement . . . trim, attractively-designed equipment that harmonizes with modern homes.

In a single unit — back blades readily adjustable for upward or downward deflection of the air stream . . . face bars individually adjustable for horizontal deflection. Back blades provide even distribution, uniform velocity . . . minimized resistance, noise elimination. Available in a range of sizes for sidewall or baseboard installation, with air intakes to match supply registers.

PLIAVANE MULTI-SHUTTER
REGISTERS MAY BE USED
WITHOUT FRAMES...OR WITH
ANY STANDARD INSTALLA-
TION FRAME

ASK YOUR JOBBER TODAY

TUTTLE & BAILEY



NEW BRITAIN, CONNECTICUT

So long as your customers *Breathe*
they need *Air* as well as *Heat...*



The Raytheon Home Precipitator is available through leading manufacturers and jobbers either as a separate unit, or as an integral part of air conditioner or warm air furnace.

... therefore, sell **INDOOR COMFORT***

Healthful circulation of warmed or cooled, humidified or de-humidified air! That's *Indoor Comfort* . . . the value you're selling against just plain *heat*. But next time you talk to a prospect remember your big new plus . . . Electronic Air Cleaning by RAYTHEON.

The Raytheon Precipitator, as far as you're concerned, is simply an *improved element* in the conditioning system. But see what it does for the Home Owner . . . removes every particle of airborne dust, soot, pollen *and even smoke*, which is only 1/250,000th inch in diameter. That means . . . a *dust-free* home, and new *breathing comfort*, in addition to the already-known benefits of properly conditioned air.

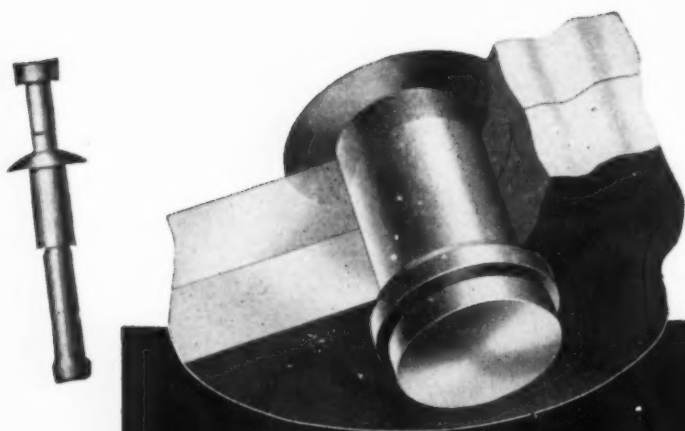
Plan today, to boost your sales with this new all-seasons item. Ask your manufacturer or distributor about the Raytheon Precipitator. Available now for both new and existing installations.

**INDOOR COMFORT is complete only when indoor air is properly warmed or cooled, humidified or de-humidified, and electronically cleaned.*

RAYTHEON

Excellence in Electronics
RAYTHEON MANUFACTURING COMPANY
COMMERCIAL PRODUCTS DIVISION
WALTHAM 54, MASSACHUSETTS
*Industrial and Commercial Electronic Equipment,
Broadcast Equipment, Tubes and Accessories*
*Sales Offices: Atlanta, Boston, Chicago,
Cleveland, Louisville, New York*

Write for illustrated Bulletin DL-P-509

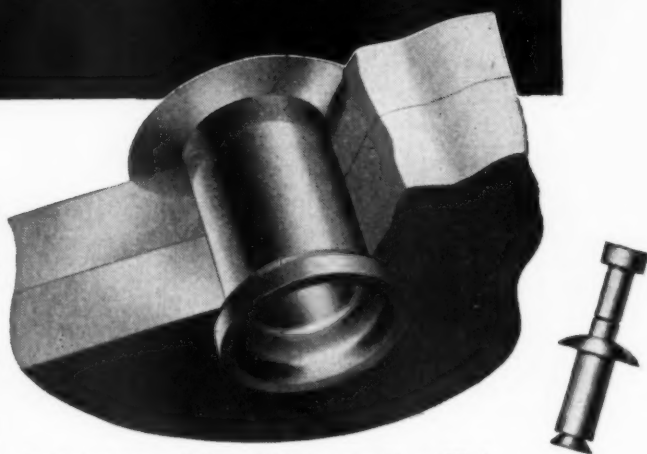


High-strength, self-plugging type Cherry Blind Rivet, showing the perfectly formed blind head and the tight stem-plug.

CHERRY BLIND RIVETING

Speed excelled by no other fastening technique

Security equalled only by conventional riveting



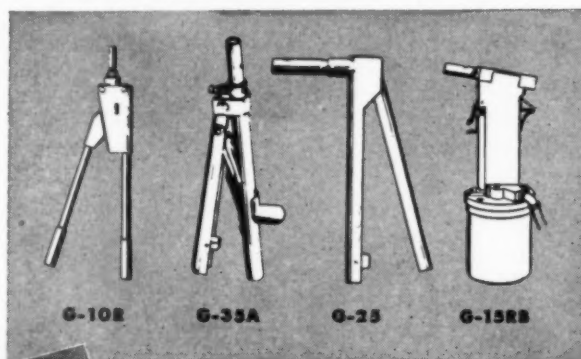
Tight-clinching, pull-through hollow type Cherry Blind Rivet, showing the perfectly formed blind head.

Cherry Blind Riveting has stirred up enormous interest since its inception during the war. This remarkable fastening technique is so fast and the results are so uniformly dependable that it has spread from industry to industry at an astonishing rate.

Installation Speed—No hammering or bucking. Cherry Blind Rivets are installed with a controlled pull from one side of the work only. Installation is a fast, one-man operation requiring only three simple steps: (1) inserting rivet in hole; (2) engaging the rivet; (3) actuating the gun. This adds up to speed, speed, speed.

Dynamic Expansion of rivet shank during installation (greater shank expansion than any other blind fastener) means tight, strong, vibration-resistant joints. Powerful controlled pull of rivet gun draws stem into rivet, forcibly expanding rivet to fill hole tightly. Cherry Blind Rivets don't work loose like nuts and screws.

Monel, Steel, Aluminum make up the Cherry Rivet materials classification. There are three types, two head styles, a range of diameters and lengths.



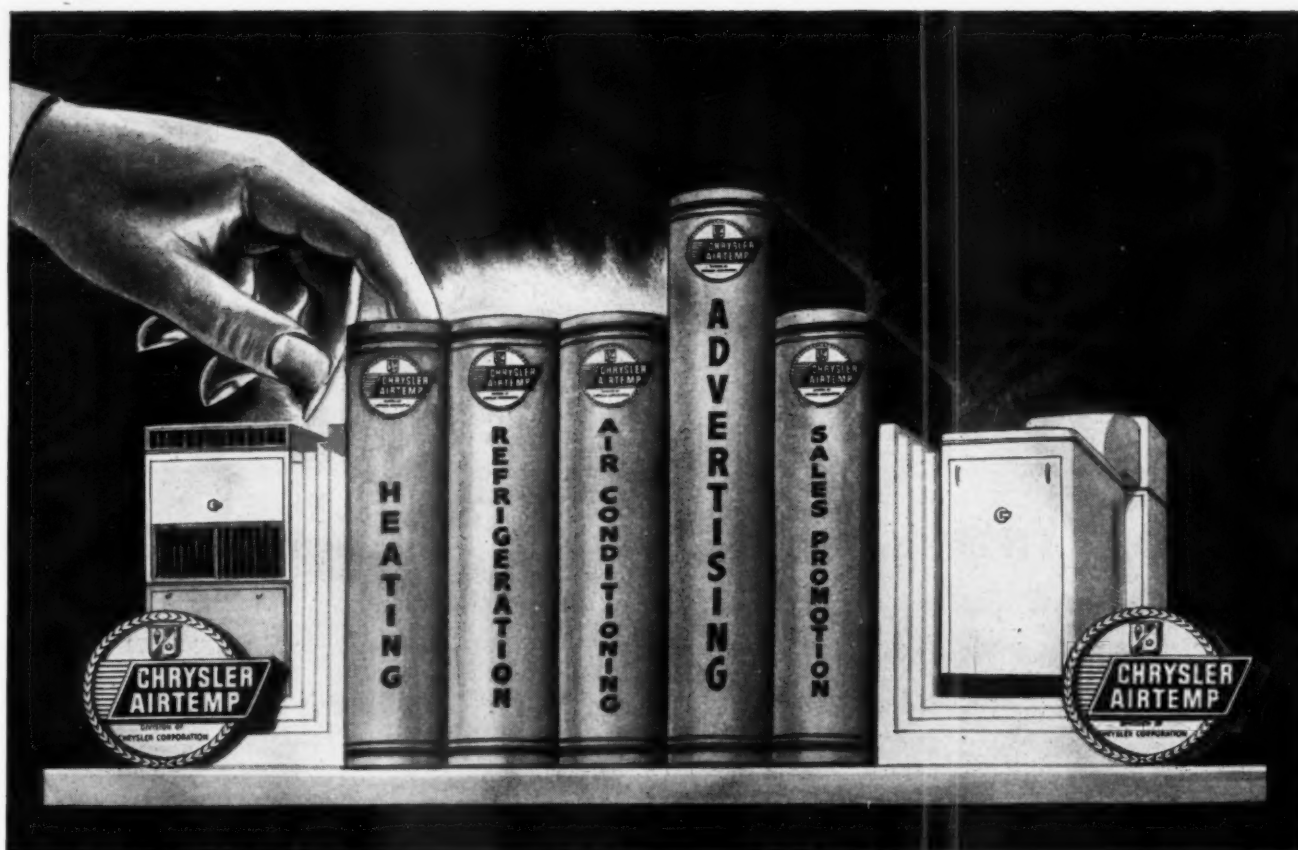
Cherry
Blind
Rivets

A series of special "guns," both pneumatic and hand-operated, have been designed for upsetting Cherry Blind Rivets. All are small, lightweight, easy to handle, positive in action.

Find out all about Cherry Blind Rivets and their many applications. Write Dept. G-200, Cherry Rivet Co., 231 Winston St., L. A. 13, Calif.

CHERRY RIVETS. THEIR MANUFACTURE & APPLICATION ARE COVERED BY U. S. PATENTS ISSUED & PENDING

Cherry Rivet
Company
LOS ANGELES 13, CALIFORNIA



FINE PRODUCTS PLUS SALES HELP!

HOW do you sell them? That's important to a dealer's success. When you sign a Chrysler Airtemp dealer agreement you not only get products which reflect the famous engineering and mass production skill of Chrysler Corporation—you also receive practical sales help.

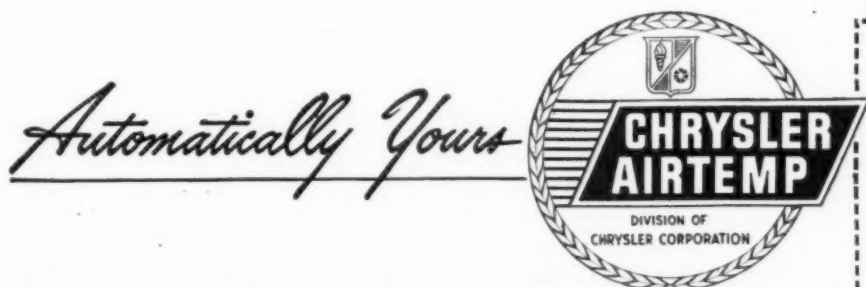
For each group of products in the Chrysler Airtemp Triple Line there's a simplified sales training course—complete with all the sales tools you and your salesmen need to do a thorough selling job.

There's more! Chrysler Airtemp through national

advertising constantly cultivates a background of public acceptance to support your sales effort. Add to this the good will enjoyed by Chrysler Corporation—built up over many years by the manufacture and advertising of excellent products.

The Triple Line (home heating, air conditioning and commercial refrigeration) was created to give dealers profit opportunities every month in the year. However, dealer agreements are also written for one, or two lines to fit requirements of specialty organizations. If you are interested, we invite you to mail the coupon below for complete dealer agreement details.

AIRTEMP DIVISION OF CHRYSLER CORPORATION, Dayton 1, Ohio
In Canada: Therm-O-Rite Products, Ltd., Toronto



HEATING • AIR CONDITIONING • COMMERCIAL REFRIGERATION

MAIL THIS TODAY

Airtemp Division of Chrysler Corporation
Dayton 1, Ohio

Please provide me with information concerning Chrysler Airtemp dealer agreements. (AA-8)

Name

Business

Address

City State

I am interested (check) Heating ☐

Cooling ☐ Refrigeration ☐

"High Cost" Complaints getting you down?



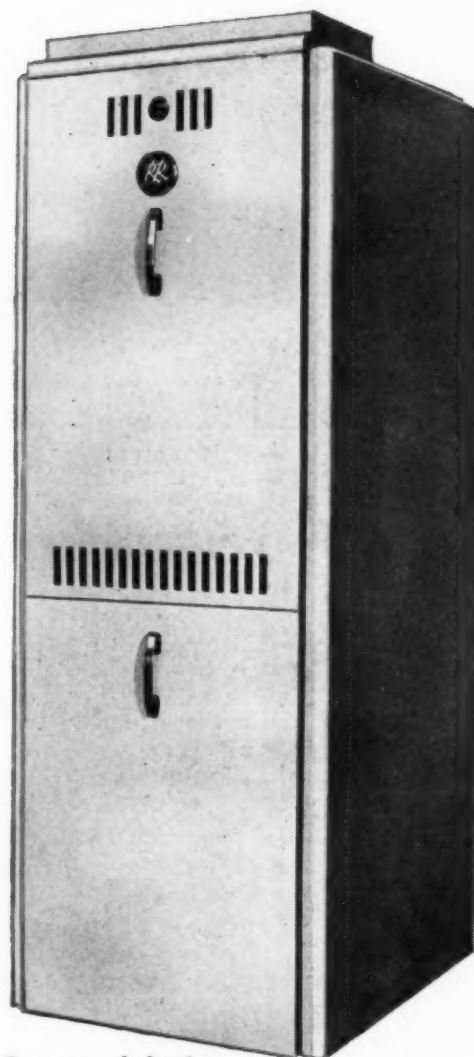
AVOID THEM by installing this
Richmond packaged conditioner
... shipped completely assembled

The Richmond Winter Air Conditioner can be quickly installed in basement or utility room—requires only about 4 to 6 sq. ft.

The smartly styled jacket with white "kitchen cabinet" finish is a mark of quality and good value throughout.

Quick facts about the Richmond Gas Winter Air Conditioner

- Heat exchanger cast in one piece of chrome-iron alloy for long life
- Baked-on Dulux white enamel finish
- Completely packaged, quickly installed
- Spun-glass filters easily renewed
- Quiet—blower fan floats on rubber
- Clean—burns gas
- Four sizes: 66,000; 90,000; 115,000 and 140,000 btu input
- Carries both AGA approval and a one-year replacement guarantee



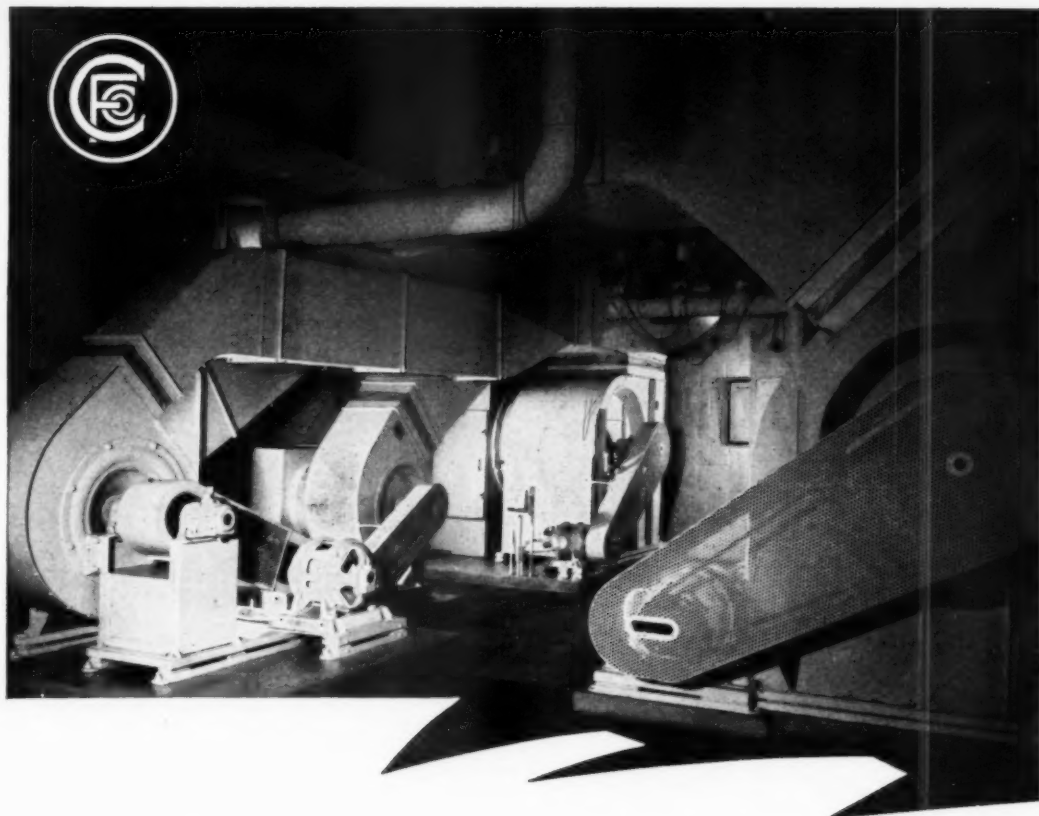
See your wholesaler
or write Richmond Radiator Company,
19 East 47th Street, New York 17, N. Y., for
name of nearest Richmond wholesaler.

FACTORIES AT METUCHEN, N. J., MONACA, PA., NEW CASTLE, DEL., UNIONTOWN, PA. (2)



RICHMOND RADIATOR COMPANY
Affiliate Reynolds Metals Co.

Enamelled Cast Iron Ware • Vitreous China • Porcelain-Glass • Gas Radiators • Gas Winter Air Conditioners • Gas Heating Furnaces • Radiators



Showing the Clarage fans which supply air for completely conditioning the famous Tiffany & Co. jewelry store, Fifth Avenue, New York City... equipment by Clarage is giving satisfactory, economical service in thousands of industrial plants, commercial and public buildings.

Built **HEAVY** Where the Strains Come

It's our policy to build Clarage equipment **HEAVIER** than common practice. From the customer's standpoint, we've found that it always pays.

That's why Clarage fans will take a lacing day

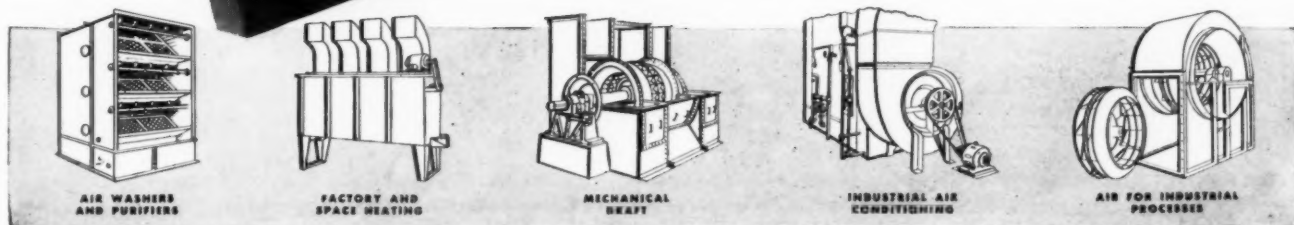
after day, year after year, on your most difficult jobs without performance failure.

Yes, to see Clarage **FIRST** for air handling and conditioning equipment is invariably a wise and profitable move.

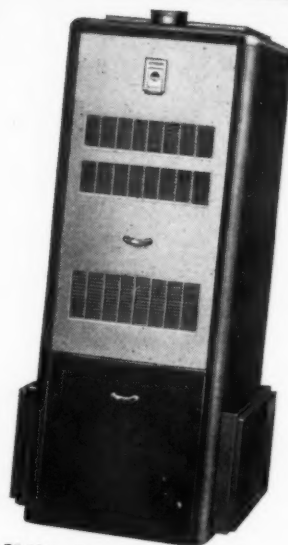


CLARAGE FAN COMPANY
KALAMAZOO, MICHIGAN

APPLICATION ENGINEERING OFFICES IN ALL PRINCIPAL CITIES



Gravity Furnace for Modest Budget. The SHAWNEE Warm Air Furnace is a compact unit from the famous Sunbeam line. Burns natural, manufactured, mixed or liquefied petroleum gas. Noted for its dependability and cleanliness, the Shawnee has corrosion and rust resisting copper bearing steel heating element which will give long and efficient service. Radiator clean-out plates are readily accessible through opening in outer jacket.



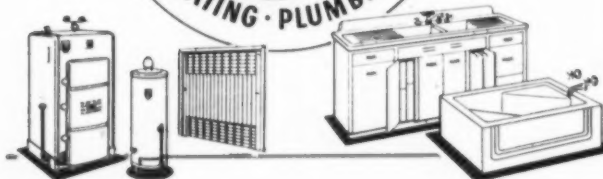
For Utility Room Installation. The WYANDOTTE Winter Air Conditioner. Burns natural, manufactured, mixed or liquefied petroleum gas. For homes without basements, individual apartments, or as a space-saver in small basements. Has same general construction as the Seneca, with copper bearing steel heating element and radiator clean-out plates. Special openings in outer jacket provide access to radiator clean-out plates. In six sizes with capacities ranging from 55,000 to 150,000 Btu. input per hour.

Selling Points from **AMERICAN-Standard**

For Small to Medium Sized Homes. The SENECA Winter Air Conditioner. For natural, manufactured, mixed or liquefied petroleum gas. Copper bearing steel heating element resists corrosion and rust. Baffles in large radiator conduct gases through 3 passes, heating entire radiator completely before gases enter flue. Scientifically designed blower handles large volume of air with minimum power. Convenient radiator clean-out plates are readily accessible through special openings in jacket. Available in five sizes with capacities ranging from 70,000 to 150,000 Btu. input per hour.



■ Yes, you've got the "edge" in selling points from the minute you display American-Standard products. In fact, even before you begin talking engineering and construction advantages, the widely-advertised American-Standard name and familiar Mark of Merit have created strong consumer preference for these products. For to home owners, builders, and architects everywhere, they stand for the very finest in heating equipment and plumbing fixtures. Another important point is that you can sell for modernization on the convenient Time Payment Plan of the Heating & Plumbing Finance Corporation. For details, see your Wholesale Distributor. American Radiator & Standard Sanitary Corporation, P. O. Box 1226, Pittsburgh 30, Pa.



Serving the Nations' Health and Comfort

LOOK FOR THIS MARK OF MERIT—It identifies the world's largest line of Heating and Plumbing Products for every use . . . including Boilers, Warm Air Furnaces, Winter Air Conditioners, Water Heaters, for all fuels—Radiators, Convectors, Enclosures—Gas and Oil Burners—Heating Accessories—Bathtubs, Water Closets, Lavatories, Kitchen Sinks, Laundry Trays, Brass Trim—and specialized products for Hospitals, Hotels, Schools, Ships, and Railroads.

Save time ON PRESSING, BENDING, STRAIGHTENING WITH A **KRW HYDRAULIC ARBOR PRESS**

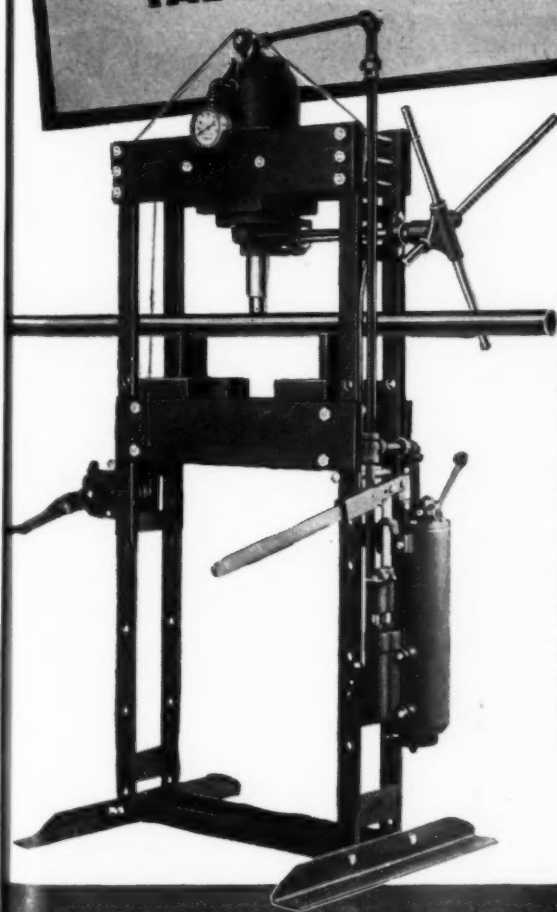
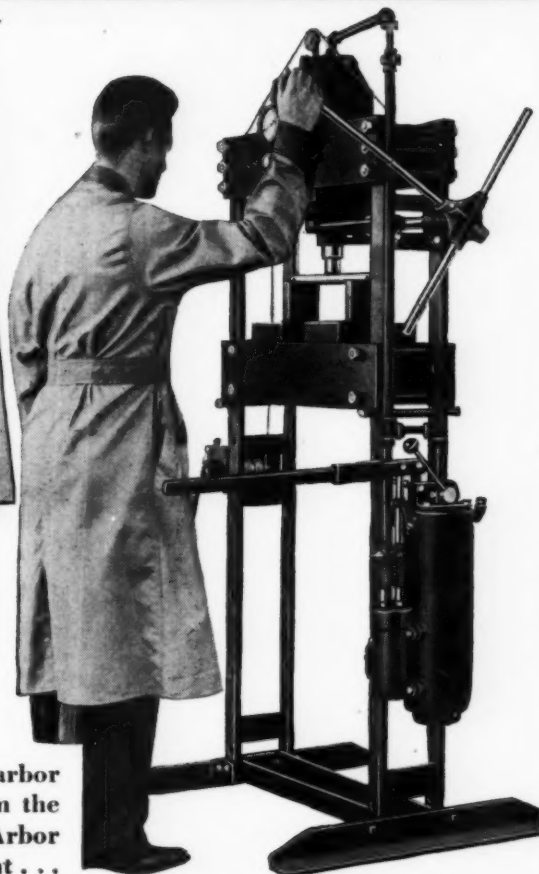
**INDISPENSABLE IN ANY SHOP
...HANDLES SHORT-RUN PRO-
DUCTION WITH LOW-COST DIES
...AVAILABLE IN 25 TO 75-TON
CAPACITIES, EITHER HAND-
OPERATED OR MOTOR-DRIVEN,
WITH VERTICAL OR HORIZON-
TAL RAM TRAVEL.**

KRW HAND- OPERATED PRESSES

The old conception of an arbor press is as different from the modern KRW Hydraulic Arbor Press as day is from night...

now they are built in innumerable shapes, sizes and adaptations to work on hundreds of production jobs other than common straightening, bending and pressing work.

They are available as speedy Hand-Operated Presses; highly flexible Air-Operated Presses or as versatile and effortless Motor-Operated Presses. Then too, they are built in almost any conceivable physical form... tall, short, narrow, vertical or horizontal standing, as gap presses, forming brakes and many other designs. Mass production in a modern plant keeps KRW prices at rock bottom and quality at the highest possible peak. Write for the KRW illustrated Press Catalog. Mail the coupon for your copy now.



K. R. WILSON

215 MAIN ST., BUFFALO 3, N. Y.

USA

K. R. WILSON, 215 MAIN ST., BUFFALO 3, N. Y.

Please send me information regarding 56

- KRW Hand-operated Presses ☐
- KRW Air-oil Operated Presses ☐
- KRW Motor-Driven Presses ☐

Name _____

Address _____

City and Zone _____ State _____



Durable Ductwork for industrial air-conditioning

A textile factory, a chemical plant and a printing establishment all present different air-conditioning problems from the engineering standpoint. But they all require rugged ductwork that will give maximum service under corrosive conditions.

Beth-Cu-Loy Galvanized Steel Sheets have the properties needed for this type of service.

First, they have the strength, rigidity and fatigue-resistance found only in steel. Second, they have high corrosion-resistance due to

their copper content and their coating of Prime Western zinc. And as far as their cost is concerned Beth-Cu-Loy Galvanized Sheets are priced at little more than ordinary galvanized steel sheets.

Consider these points of superiority in Beth-Cu-Loy. They give greater customer satisfaction and help create the goodwill that builds business for the future.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

*On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation*

Beth-Cu-Loy Galvanized Sheets



Quick Summer Profits!

QUAKER Conversion

OIL BURNER

IS BACK!



Here's real news . . . the famous QUAKER CONVERSION OIL BURNER is available for immediate delivery! The mass market of small home owners is again open to you with this amazing burner designed especially for the small home. Deliveries NOW mean you can make summer installations . . . and many dealers have found that they can clinch sales by suggesting deferred payments beginning in the fall.

Get the facts about the fast-selling, easily installed QUAKER burner that's designed and priced for the big "small home" market. Tell your prospects you can convert their old-fashioned furnace or boiler into a clean, modern, work-free oil heating system now . . . payments to begin with cold weather if you offer credit. Get quick summer profits with QUAKER!

FRANCHISES AVAILABLE

Franchises now being offered to well established and reputable dealers. Mail coupon for complete information and literature.

EXCLUSIVE U.S. SALES AGENT

COMFORT EQUIPMENT CORPORATION

910 South Michigan Avenue • Chicago, Illinois

Manufactured by
QUAKER MANUFACTURING COMPANY
223 W. Erie St., Chicago 10, Ill.

- **QUAKERTROL EQUIPPED.** Only QUAKER makes QUAKERTROL . . . the ingenious device that automatically regulates the flow of oil and air to the burner.
- **NATIONALLY ADVERTISED.** The QUAKER name . . . the advantages of QUAKERTROL are nationally advertised . . . that means easy selling!
- **FACTORY ASSEMBLED.** No refractories or combustion chamber to build.
- **EASILY INSTALLED.** No installation headaches. Well illustrated installation manual shows how to install the QUAKER in a few hours.
- **PRICED TO FIT THE MARKET.** Priced for the pocketbook of the small home owner.
- **QUIET AS A WHISPER.** No combustion noise.

COMFORT EQUIPMENT CORPORATION
910 S. Michigan Avenue, Chicago 5, Illinois
Gentlemen

Please send literature and franchise information

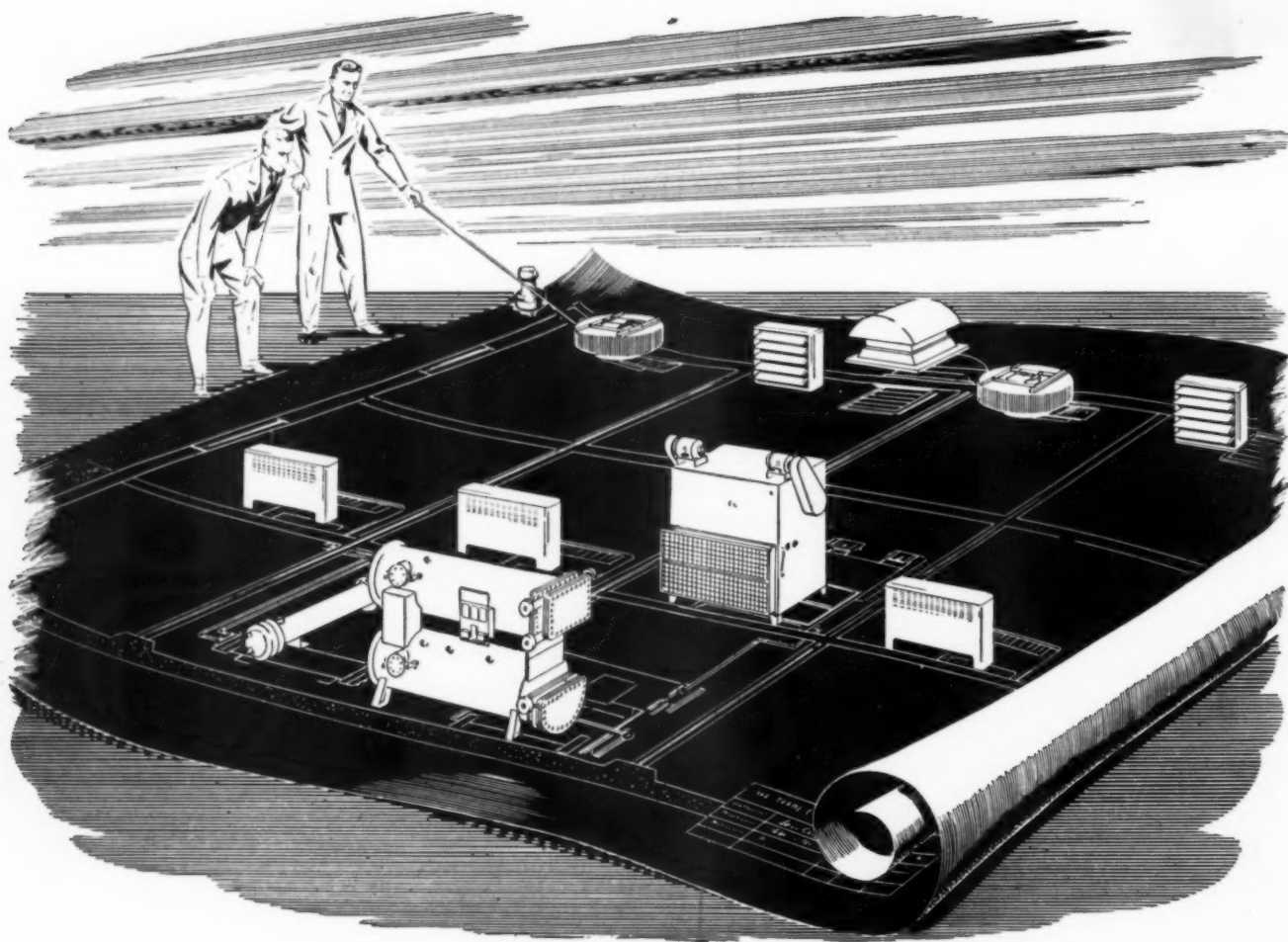
Name

Address

City

State

4-47-7A7



From now on it's **HEATING and AIR CONDITIONING** Why Be Satisfied with **HALF** of the **BUSINESS?**

Job after job now calls for both heating and cooling. Since the functions are so closely allied, often being accomplished with much of the same equipment, heating and air conditioning *must* be considered together.

Architects, engineers, and owners prefer a minimum of contracts and responsibilities — so the contractor who can bid on the whole job has a much greater chance of getting it. The contractor who cannot bid on the whole job may likely lose it to one who can.

Heating and air conditioning are so closely related, from figuring the job through installing it, that it is only logical for the contractor to grow with the industry by combining heating and air conditioning. In this way, the contractor has peak business the year around, and is assured of a steadily increasing market

in remodeling and modernization work, as well as in new construction. Just as the contractor needs both heating and air conditioning to make his service complete, the heating and air conditioning industries need additional contractors so that they can expand to meet the enormous demand.

Trane is the ideal source of supply for the independent contractor who combines heating and air conditioning. The complete Trane line includes every necessary product for entire heating and air conditioning systems — giving the contractor the undivided responsibility of *one* manufacturer. Trane field engineers in 85 field offices are constantly available for help and advice in any phase of heating and air conditioning.

TRANE

Manufacturing Engineers of Equipment for
HEATING AND AIR CONDITIONING

THE TRANE COMPANY, LA CROSSE, WISCONSIN • Also TRANE COMPANY OF CANADA, LTD., TORONTO, ONTARIO


















New BARBER-COLMAN

UNIT HEATER THERMOSTAT

This compact, sensitive, accurate thermostat is specially designed for industrial, commercial, and residence service where the control instrument must handle the full starting current at line voltage on motors up to $\frac{1}{4}$ h.p. It is available in two ranges: 40° to 80° F for heating, 55° to 95° F for cooling applications. Built-in adjustable stops provide locking or range restriction.



ACTUAL SIZE



BASE MOUNTING PLATE FITS STANDARD OUTLET BOXES

The Barber-Colman Unit Heater Thermostat is furnished complete with metal base plate punched for mounting on standard outlet boxes of the surface or flush types, permitting direct attachment without adapters to regular conduit fittings.

*Write for
Bulletin 73141*

BARBER-COLMAN COMPANY

1226 ROCK STREET • ROCKFORD, ILLINOIS

New Literature

For your convenience in obtaining copies of New Literature use the coupon on page 126.

196—Precipitators

Raytheon Manufacturing Company, 100 Foundry St., Waltham 54, Mass., is distributing a new general catalog, illustrating and describing their complete line. The Raytheon precipitators—both home and industrial—are included as well as welders and welding equipment.

197—Reglet Installation

Fry Reglet Company has published a pamphlet that gives graphic illustrations of the best method of installation of their reglet. Applications are explained for concrete, cement block, steel sash and masonry. A type of gravel stop is also shown.—*Fry Reglet Co., 1725 N. Pennsylvania Ave., Bremerton, Wash.*

198—Specifications and Engineering Data

American Coils, Inc., 360 Thomas St., Newark 5, N. J., has just issued an illustrated catalog covering the two complete lines of Latenaire and Sensaire air conditioning units. Included in these Amcoil lines are remote and self-contained models of both floor and wall types, as well as duct-type coil for use in conjunction with any forced air conditioning system.

Complete specifications and engineering data for all models will be found. The catalog also includes a new air conditioning calculator chart for selecting the correct model and capacity for individual conditions.

199—Diamond Damper

Information concerning the Diamond square damper which features corner to corner suspension is contained in a folder published by the Springfield Ventilating Works. Damper is a complete unit designed for use in vent flues on unit-ventilated buildings as a replacement for pan dampers.—*Springfield Ventilating Works, 137 Armory St., Springfield, Mass.*

200—Stainless in the Meat Industry

Allegheny Ludlum Steel Corporation, 2020 Oliver Building, Pittsburgh, is distributing the third in a series of industry booklets—"Allegheny Metal in the Meat Industry." Historically, it sketches how the industry began using stainless steels in the 1920s.

Tables list corrosion resistance and comparative physical properties of stainless steels used. Available forms of Allegheny metals and principles of fabricating are discussed.

201—School Control Problems

Minneapolis-Honeywell Regulator Company, 2726 Fourth Avenue South, Minneapolis 8, has published a new handbook on heating, ventilating and air conditioning control systems for the modern school, setting forth in non-technical terms information on controls making possible safe, healthful and economic operation of school heating and ventilating systems. Because of the complexity of the modern school building, special controls are essential.

SUMMERTIME IS *General Time*

Summertime can be a busy season for those who actively push GENERAL filters. Get your customers lined up with a new fuel oil filter before the next heating season, and they'll be glad you recommended the best fuel oil filter available, GENERAL.

STANDARD MODEL 1A-25
IDEAL FOR SMALL HOMES, SPACE HEATERS & HOT WATER HEATERS

MASTER MODEL 2A-700
ADEQUATE CAPACITY FOR AVERAGE SIZE AND LARGE HOMES

DELUXE MODEL 2A-300
JUMBO SIZE FOR LARGE SYSTEMS AND DIRTY TANKS

General FUEL OIL FILTER DELUXE MODEL 2A-300

write

direct or to your nearest jobber for information on the GENERAL line of fuel oil filters.

FACTORY REPRESENTATIVES: WILLIAM J. DEBLER & SONS, Newark, N. J., Philadelphia, Pa., Brookline, Mass.; V. B. KATHE, Vancouver, Wash.; WESTERN SALES COMPANY, San Francisco, Cal.; W. V. NUTTALL COMPANY, Salt Lake City, Utah; B. E. HOWENSTEIN, St. Louis, Mo.; L. E. SCHULEIN COMPANY, Chicago, Illinois; GRANSE CORPORATION, St. Paul, Minn.; RICHARD BARTHELMESS SALES COMPANY, Jacksonville, Fla.; T. C. FRENCH COMPANY, Akron, Ohio; A. G. ALLEN COMPANY, Indianapolis, Ind.; JEFF A. HEDDON COMPANY, Atlanta, Georgia.

GENERAL FILTERS
INCORPORATED

GENERAL FUEL OIL FILTER

12890 WESTWOOD AVE.
DETROIT 23, MICHIGAN

CANADIAN FACTORY BRANCH: GENERAL FILTERS CANADA, 1227 ST. CLAIR • TORONTO, ONTARIO



...FOR MANY MEDIUM SIZE HOMES

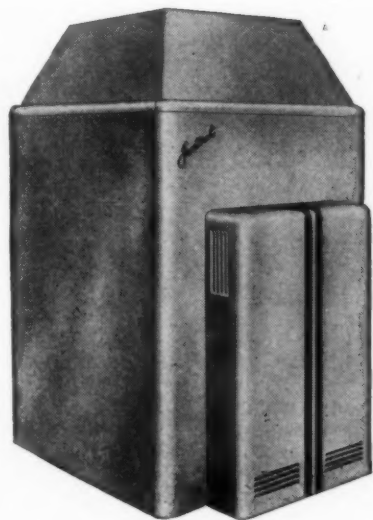
...FOR MODEST BUDGETS



THE NEW, IMPROVED, GAS-FIRED

Janitrol Gravity Furnace

IS THE MOST PRACTICAL



GRAVITY warm air has always been a popular method of heating small and medium homes. Now it has been brought up to date by the newly designed, completely automatic Janitrol Gas-Fired Furnace.

Versatile for Many Floor Plans

Especially suited to small basements, this new Janitrol takes little floor area, eliminates the need of space for fuel storage. It's good looking too, with attractive gray casing and neatly rounded corners... looks as modern as its design.

Low Initial Cost and Operation

The Janitrol Gravity Furnace is economical... to install... to use. It gives a gentle, continuous flow of warm air to each room, without blowers or motors. Operation is fully automatic, furnace requires no attention... simplicity of design and

unique construction means low installation and maintenance costs.

IMPORTANT TO REMEMBER! While most builders today are plagued with rising costs, the new Janitrol Gravity Furnace gives you a remarkable opportunity to show your builder customers how to save on his heating costs, without sacrificing quality.

The Gravity Unit is often the best system to recommend for compact, moderate size homes with basements and the savings you can offer can make these type of homes more saleable.

We are now advertising the new Janitrol Gravity Furnace to builders and contractors, advising them to secure their copy of the Janitrol Heating Guide A.1.A 30B and to get more complete information from his local Janitrol Dealer. Be prepared to answer their inquiries. Write for your copy today.

SURFACE COMBUSTION CORPORATION, TOLEDO 1, OHIO

Janitrol

GAS-FIRED
HEATING EQUIPMENT



Winter Air Conditioner



Gravity Furnace



Conversion Burner



Unit Heater



Boiler



Near Type Blower Unit

New Literature

For your convenience in obtaining information regarding these items, use the coupon on this page.

202—Burners and Stokers

Consolidated Industries, Inc., Lafayette, Indiana, is distributing illustrated folders covering their gas burners, oil burners and stokers, with specifications.

American Artisan,
6 N. Michigan Ave.,
Chicago 2, Ill.

7-47

Please ask the manufacturer to send me more information about the equipment mentioned under the following reference numbers in "Equipment Developments" and "New Literature." (Circle numbers in which you are interested):

84	85	86	87	88	89	90	91
92	93	94	95	96			
196	197	198	199	200	201	202	203
204	205	206					

Name

Company

Address

Are you manufacturer? ☐ Jobber? ☐ Dealer? ☐

203—Coils 24 Inches Wide

American Nickeloid Company, Peru, Illinois, is distributing a folder covering nickel steel, chrome steel, copper steel and brass steel coils— $\frac{1}{8}$ to 24 inches wide—for speedier, more economical production.

204—Quick Reference List

American Chemical Paint Company, Ambler, Pa., has released Technical Data Sheet No. P-100-21—A Quick Reference List of rust proofing chemicals, protective coatings, metal cleaning chemicals, inhibitors.

205—Fan Performance Data

Martin Fan has compiled three bulletins that show the Martin Bucket Exhaust Fans, Utility Exhaust Fans and Multiple Vane, Belt Drive Blowers. Very specific in nature the folders give performance data for the various sizes as well as specifications and prices.—*Martin Fan & Blower Co., 4632 W. 21st Place., Chicago 50, Ill.*

206—Thermal Insulation

Reinhold Publishing Corporation, 330 West 42nd St., New York 18, has just published "Thermal Insulation of Buildings" by Paul Dunham Close, former technical secretary of the Insulation Board Institute, and the American Society of Heating and Ventilating Engineers.

The book provides information and data on the various economic and comfort advantages of thermal insulating materials, a description of the various types of insulation used in dwellings and other buildings, and an explanation of how they are applied. Price \$1.75, subject to increase.

Leading the Field



MULKEY

Manufacturers of
Oil and Gas
Floor Furnaces

•
Conversion Burners

•
Oil Trailer Heaters
and Room Circulators



TRAILER HEATERS



FLOOR FURNACE

Oil

FLOOR FURNACE

IN THE LONG RUN

EXPERIENCE AND PERFORMANCE COUNT

WHOLESALEERS • DEALERS • BUILDING CONTRACTORS

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23 YEARS OF EXPERIENCE IN DESIGN AND MANUFACTURING

LOW COST HEATING

with—



LOW INITIAL COST
LOW MAINTENANCE COST
LOW OPERATING COST

**AVAILABLE
IMMEDIATELY**

Add together the savings in initial equipment cost, operating expense and maintenance charges obtainable with Dravo Heaters and you have gone a long way in helping to offset the unusually high cost of building today.

And Dravo Counterflo Heaters have other money saving advantages too: the interchangeability of gas burners with oil burners; the combination gas-oil burning arrangement available at purchaser's option; the large capacities ranging upward from 400,000 Btu output; control and fan systems arranged for summer ventilating service; stainless steel chamber for extra long life.

Since Dravo Heaters are *available immediately* in stock, you can use the summer ventilating feature now and be prepared for comfort heating next season. Write for Bulletin FC-516 for full description.

DRAVO CORPORATION

Pittsburgh

Philadelphia

Cleveland

New York

Detroit

Atlanta

Wilmington



OVER 1,000,000
HOMES NOW ENJOY



VENTALARM[®]

CONVENIENCE
and SAFETY

It's a fact that in more than a million oil-heated homes, VENTALARM now insures convenient, economical, more efficient fuel-oil delivery service that is faster

(VENTALARM, of course, is the audible Tank Fill Signal for cellar oil storage tanks that makes any oil-burner installation *completely* automatic.)

VENTALARM signal gives instant, positive warning when the tank is filled — insures that all the fuel goes *into the tank*, without overflow or spillage.

Home owners appreciate, too, VENTALARM guarantee of freedom from interruption when the oil man calls. No need to wait around for oil delivery — with VENTALARM, the driver need never enter the home.

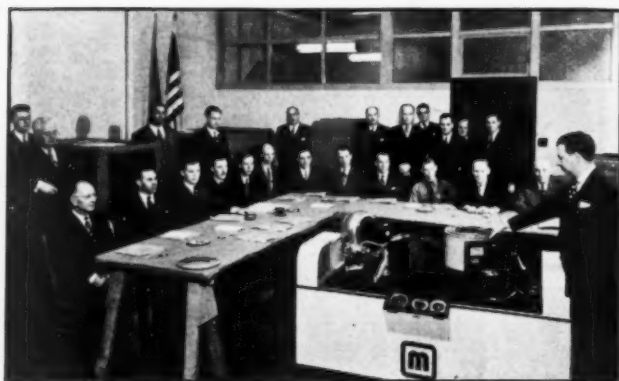
Quickly, inexpensively installed on new tanks and existing installations. Complete details and special customer mailing folders are available upon request. Purchase it from your supply house.



Canadian Licensee EMPIRE BRASS MFG. CO., LTD London, Ontario

With the Manufacturers

The first of a series of conferences on Mueller Climatrol heating and air conditioning equipment for dealers of Home Gas Industries, Chicago, headed by George A. McDonough, was held recently at the L. J. Mueller Furnace Company plant, Milwaukee, Wis.



Conducted by Frank J. Nunlist, Jr., chief engineer at Mueller, the initial conference was devoted almost entirely to the new Mueller Climatrol Types 201 and 202 Oil-Fired Gravity Furnace and winter Air Conditioner, respectively. Otto J. Ross, research director, led the discussion on the design features of these Mueller units, which can easily be converted to gas at any time, before or after installation.

Following the discussion period, the conferees were taken to the Research Laboratory, where they witnessed firing and testing procedures on various furnaces. A tour of the plant to observe the fabrication of Mueller Climatrol gas, oil and coal-fired equipment was the final event of the conference.

Sampsel Time Control, Spring Valley, Ill., has appointed Ronald Clinite Sales Engineer and his duties will consist of working in the field to assist Sampsel sales representatives and manufacturers on technical problems in regard to installation and maintenance of automatic controls. Mr. Clinite has been with Sampsel since 1939 and had been Assistant Chief Engineer since 1942.

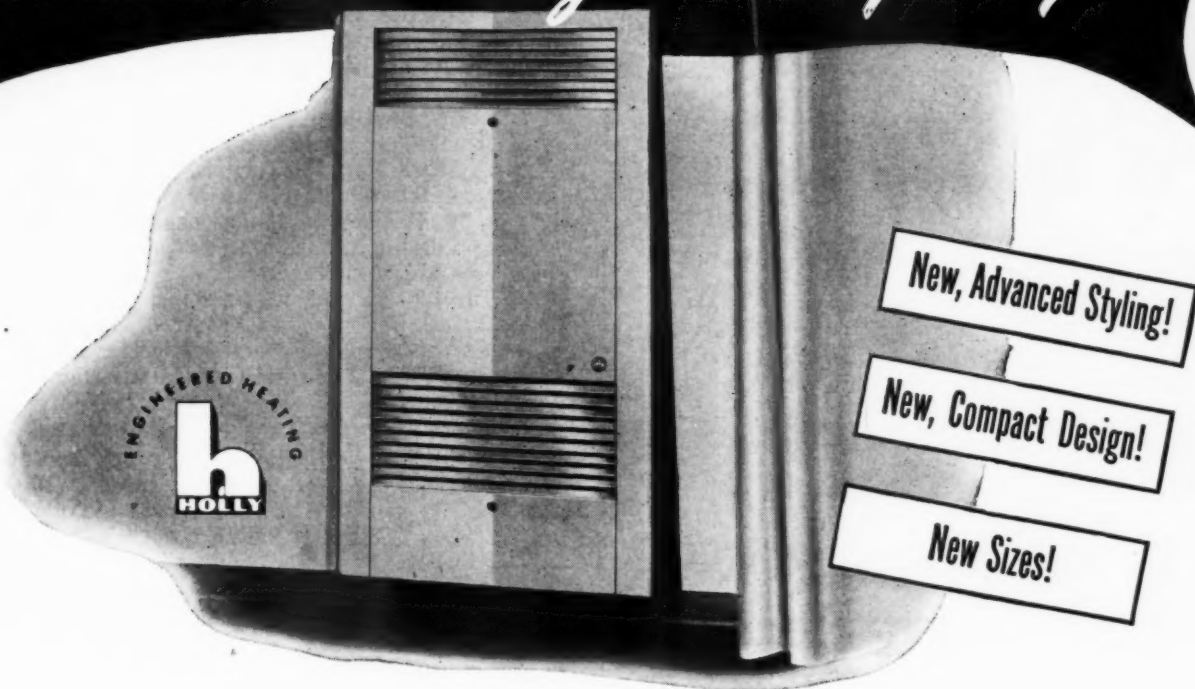


R. Clinite

C. R. Bredeson

C. R. Bredeson, 933 Plymouth Bldg., Minneapolis, is now sales representative for Sampsel in Minnesota and North and South Dakota. Mr. Bredeson has been in the heating industry for the last thirty years and is a member of the American Society of Heating and Ventilating Engineers.

Another First... Engineered by Holly



The New Holly WALL HEATER

With its wall panel styled by Walter Dorwin Teague, one of America's top designers, the new, compact Holly Wall Heater with advanced heating efficiency offers you the ideal furnace for second story installations or for use on concrete slab floor construction.

The panel design is outstanding in both beauty and efficiency. The modern styling blends with any interior decoration, while the scientifically designed louvers direct the

warm air to adequately heat every corner of the room. A hidden inlet *beneath* the panel draws in cold air off the floor.

The new Holly heating element is rigidly embossed to prevent noise, and achieves maximum air flow and efficiency by its streamlined design and exceptionally long flue gas travel.

Installation and service also have been simplified. All operating parts are mounted in a single, compact burner pan — quickly installed or easily removed for service.

Dealers: Order your new Holly Wall or Stubby furnaces NOW — have your Hollies on hand for the heating season rush. Holly sells only through bona fide dealers at established prices. If you are not yet selling the Holly line, write or wire us TODAY for the Holly Sales Plan.

Manufacturers of the Famous Stubby Floor Furnaces

HOLLY MANUFACTURING COMPANY

875 SOUTH ARROYO PARKWAY • PASADENA 2, CALIFORNIA

OVER 1,000,000
HOMES NOW ENJOY



VENTALARM[®]

CONVENIENCE
and SAFETY

It's a fact that in more than a million oil-heated homes, VENTALARM now insures convenient, economical, more efficient fuel-oil delivery service that is faster

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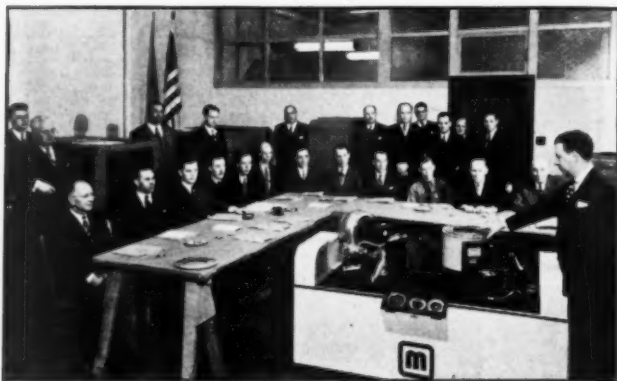
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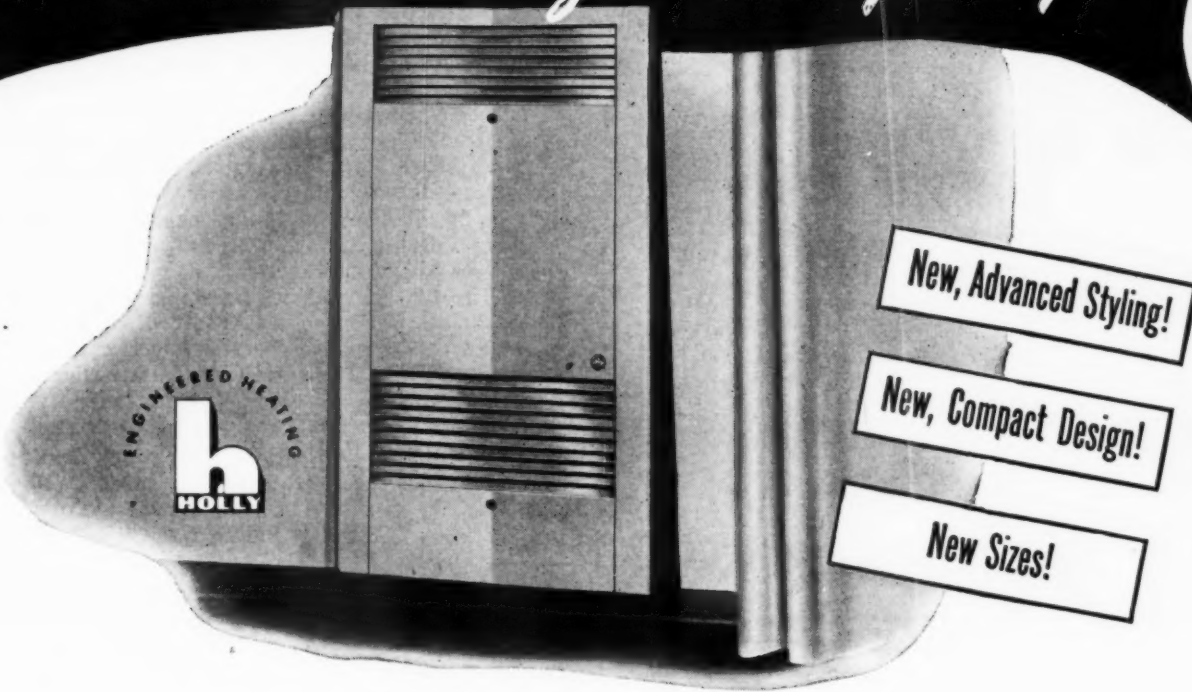


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Manufacturers of the Famous Stubby Floor Furnaces

HOLLY MANUFACTURING COMPANY

375 SOUTH ARROYO PARKWAY • PASADENA 2, CALIFORNIA

EASIER INSTALLATIONS



**through visual instruction
and mechanical superiority**

In the stoker business, the dealer's selling price is largely determined by competition, but the profits are determined on cost of selling. Link-Belt mechanical superiority means satisfied customers (who tell their friends) and provides effective talking points for the dealer.

One of the many effective merchandising and engineering helps developed by Link-Belt this year is a series of films on installation and service. The illustration shows one of the panels. Let us tell you more about our dealer and distributor proposition.

LINK-BELT COMPANY, Stoker Division
2410 W. 18th St., Chicago 8, Illinois

Send data to _____

10,722

LINK-BELT
Magic Flame and Power-Flex
STOKERS

With the Manufacturers

Frank P. Maxwell has been elected president and treasurer of the Crise Mfg. Co., Columbus, O., succeeding William C. Lerch, who is retiring because of ill health.

Controlling interest in the electrical manufacturing concern has been acquired by W. F. Rockwell, Jr., president of the Rockwell Mfg. Co., Pittsburgh; H. C. Stuckeman, general manager of Delta Mfg. Division of the Rockwell company in Milwaukee; and Mr. Maxwell, who has been assistant to the vice president of sales of the Rockwell company at Pittsburgh.

New directors of the Crise corporation will include Col. W. F. Rockwell, board chairman of the Rockwell Mfg. Co., the Standard Steel Spring Co., and the Timken-Detroit Axle Co.

The Crise company's principal product has been an automatic furnace heat control which includes patented shaded pole, reversible electric motor and thermostat and surfacestat of exclusive design.

N. A. Palmer, Special Applications Engineer of the Williams Oil-O-Matic Division, Eureka Williams Corp., Bloomington, Ill., has been appointed to the Research Advisory Committee of the National Warm Air Heating and Air Conditioning Association. It is this committee that is in charge of the activities of the staff of the Research Residence at the University of Illinois.



N. A. Palmer

E. F. Fritz

J. G. Brown

Other recent Williams appointments include Ernest F. Fritz, district representative for northern Illinois and southern Wisconsin and James G. Brown, who will have a territory that includes the Illinois counties of Cook, McHenry, Lake and DuPage and Lake County in Indiana.

Jack York Hewitt has been named sales manager of both the Miracula and Gemco Air Conditioner Divisions of the General Engineering and Manufacturing Company, of St. Louis. Hewitt formerly was sales manager of the air conditioner division only.

Frank D. Klein was appointed assistant sales manager of the air conditioner division. Klein was previously production manager of the Murray Corporation plant in Detroit.

Plans for the nation-wide Miracula distributor organization are well under way and will be completed when production begins in September. Miracula is the year-round air conditioner for homes that heats in winter without burning any kind of fuel, cools in summer, controls humidity and removes dust, dirt, and pollen from the air.

AEROFIN



gives you QUICK HEATING ...

...FAST COOLING

Aerofin
is sold only by manufacturers
of nationally advertised fan
system apparatus.
List on request.

AEROFIN construction—metallic bonding and complete tinning—assures highest practical heat transfer and protection from corrosion. Aerofin engineering—based on accurate published ratings—fits the right equipment to the job. A complete range of designs for every kind of heat-transfer application. Compact, easy to install. Experienced Aerofin field engineers are ready to help you with your heat-exchange problems.

AEROFIN CORPORATION

434 S. Geddes Street, Syracuse 4, N. Y.

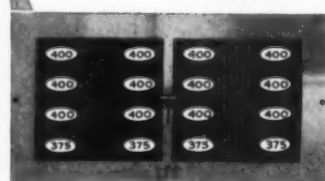
NEW YORK • CHICAGO • CLEVELAND • DETROIT • PHILADELPHIA • DALLAS • MONTREAL

AMERICAN ARTISAN, July, 1947



H. & C. No. 751
SUPPLY REGISTER

The
VELOMETER
Test
Conclusively Demonstrates
the VAST SUPERIORITY of
the **H&C No. 75**
REGISTER



Air Velocities with No. 75 Design



Air Velocities with
Conventional Register.

with its
**INCOMPARABLE
TURNING BLADE
VALVE**

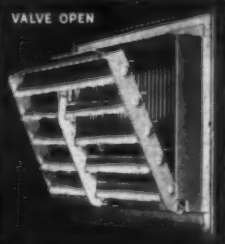


HART & COOLEY MANUFACTURING CO.

**World's Largest Manufacturers of
Registers, Grilles, Furnace Accessories
HOLLAND • MICHIGAN**

In Canada: Hart & Cooley Mfg. Co., Fort Erie, N. Ontario.

Look
at the readings at the
left. The unique TURN-
ING BLADE VALVE
smoothly divides the air
flow and distributes it evenly
to every portion of the face.
Resistance, according to im-
partial authorities, is much
less; and consequently air
distribution is more uniform
throughout the room. Truly
the H&C No. 75 is indis-
pensable for Air Condition-
ing at its best! Yet it costs
no more than other multi-
deflection registers.



With the Manufacturers

Lester O. Stearns is now manager of the Residential division of York-Shipley, Inc. His duties include supervision of all sales of York-Shipley residential and commercial oil-fired heating equipment and enlarging of the company's distributor and dealer organization. Before joining York-Shipley Mr. Stearns was owner and director of the Stearns Supply Company of Cleveland, a tool sales



L. O. Stearns

concern that he had established in 1943. A veteran of the first World War, Mr. Stearns joined the American Radiator Company in 1919 and was associated with them in a managerial capacity (except for two years) until 1939 when he went to Columbia Radiator.

The Jessop Steel Co., Washington, Pa., and the Alan Wood Steel Co., Conshohocken, Pa., have completed a working agreement whereby the technical and manufacturing facilities of both companies are to be used for large tonnage production of stainless-clad steel sheets, according to an announcement by the officials of both companies.

Jessop Steel Company is a leading producer of stainless and stainless-clad steel, as well as tool steels, alloy steels, and other specialties, while Alan Wood Steel Company has been producing open hearth quality steels for 120 years. The agreement between the two steel companies is expected to contribute greatly to meeting the current demand for stainless-clad steel sheet in the food processing and architectural industries, and the anticipated demand for this material in new fields, particularly for automobile accessories and home appliances.

Malcolm F. Mackenzie has been made North Central representative for the Viking Air Conditioning Corp. of Cleveland, Ohio. He has been placed in charge of an area that includes Michigan, Wisconsin, Minnesota and the northern portions of Indiana, Illinois and Iowa.

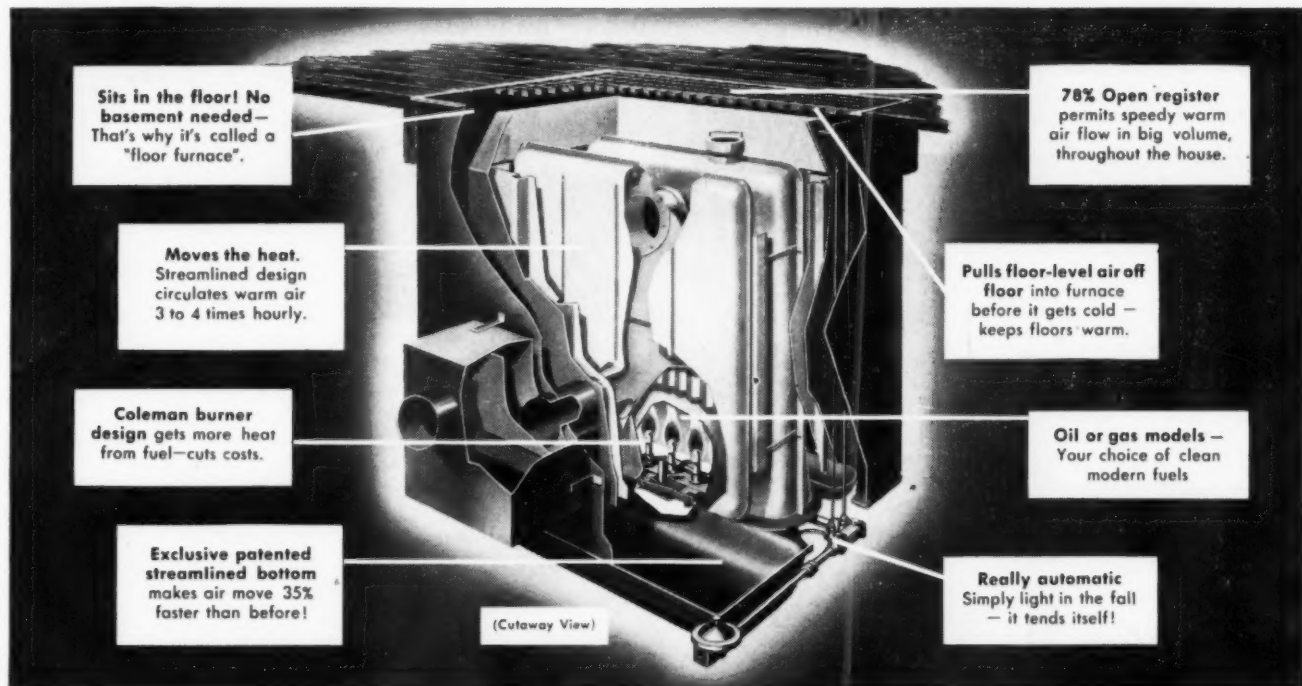


M. F. Mackenzie

The establishment of distributorships thruout this area had been a previous activity of Mr. Mackenzie and in the future he will co-operate with manufacturers developing products that will require the use of humidifiers and blowers. While originally employed in the building industry he has been in the heating field for the last several years.

New Kind of Furnace!

**Engineered to meet all modern needs and
proof-tested for performance**



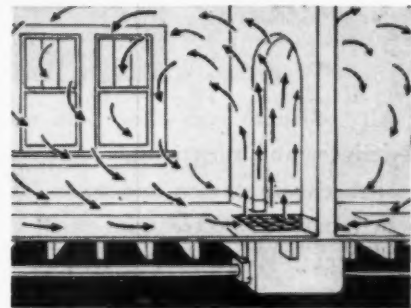
Coleman engineering research has developed this Coleman quality and performance



Solid comfort is the result of Coleman's engineering and research—a background of years that has taught Coleman how to make the most efficient use of all types of gas and oil heating equipment. When you install properly engineered equipment like Coleman's, your job is made easier and your customers happier.



Clean heat means satisfied women customers. Automatic, economical heat means satisfied men customers. "Warm-Floors" performance pleases the whole family. There are models for gas or oil—the clean, easy-to-handle fuels. So you satisfy everybody when you install dependable Coleman Floor Furnaces.



It really moves the heat. Arrows show circulation of warm air. Sits in the floor—a compact, completely packaged unit. No basement or air ducts needed. Easily hooked up to gas or oil lines and to chimney vents. A quick, clean, satisfactory installation can be made in 3 to 4 hours, average time.

There may still be a franchise for Coleman Floor Furnaces open in your community. Mail the coupon today for information to: The Coleman Co., Inc., Dept. AA-661, Wichita 1, Kansas; Philadelphia 8, Pa. (Terminal Commerce Bldg.); Los Angeles 54, Calif.

AUTOMATIC HEATING ***Coleman***

The Coleman Co., Inc.
Dept. AA-661, Wichita 1, Kansas
Please send me the name of my nearest Coleman distributor and information about your Floor Furnace Franchise.

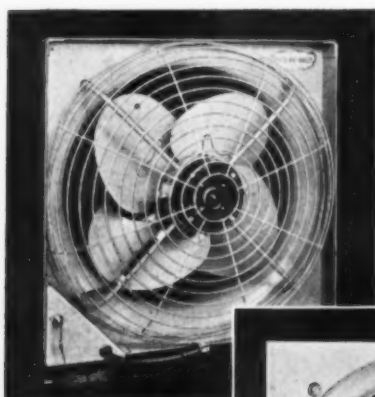
Name _____
Address _____
Town _____

Fresh-Air-Maker

direct driven

Exhaust Fans

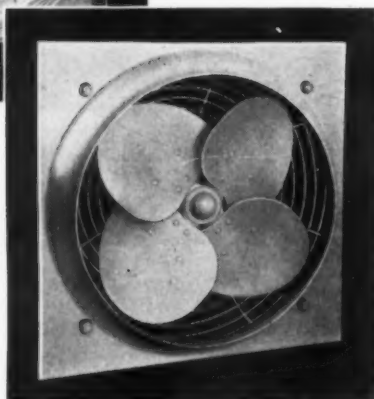
★ ★ ★ Three fine models—12", 16", 20" have been added to the famous Fresh-Air-Maker line



and are ready for immediate delivery.



•12"
•16"
•20"



All 3-SPEED fans—fine performers with high air delivery and surprisingly quiet operation. They are attractive in design and beautifully finished all over in ivory. Complete with cord and plug and convenient 3-speed pull switch so fan can be located high up and speed controlled if desired. Wire guards and manually operated louvers optional.

FRESH-AIR-MAKER, QUALITY • MATERIAL • WORKMANSHIP • PERFORMANCE • PRICED RIGHT



WRITE FOR PRICES — IMMEDIATE DELIVERY

New Literature

SCHWITZER-CUMMINS

Ventilating Division

1145 E. 22nd STREET • INDIANAPOLIS 7, INDIANA

- BLOWERS
- VENTILATORS
- BLOWER WHEELS

With the Manufacturers

Meyer Furnace Company recently appointed two new sales representatives to cover the state of Indiana. The southern part of the state will be traveled by Walter McFarland, who has been associated with the company since the early twenties except for brief periods of working for jobbers of Meyer products and Curtiss-Wright during the war.

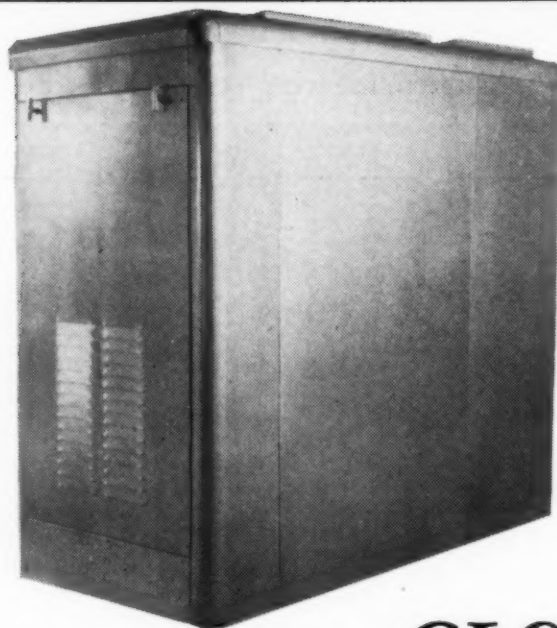


Walter MacFarland



Fred Zingsheim

Fred Zingsheim joined Meyer in December, 1946, and followed an intensive training program at the plants and is now assigned to the northern Indiana territory. Mr. Zingsheim has a background of twenty-six years in the warm air heating and sheet metal field, including work with his father in Green Bay and later experience in St. Louis and Milwaukee.



The New Post-War GLO

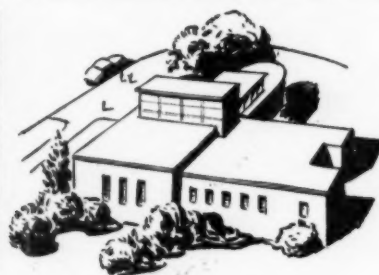
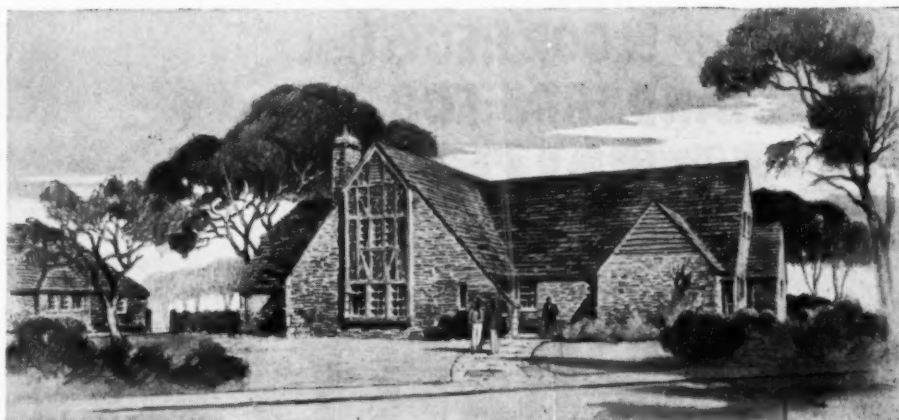
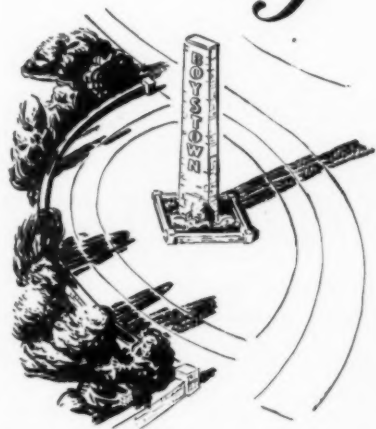
COMPARE the all welded heavy steel construction of the Glo gas & oil fired winter air conditioners. Various sizes with all approved equipment.

Dealer Inquiries Solicited

GLO DISTRIBUTING CO.
407-409 N. MAIN ST. ROYAL OAK, MICHIGAN

Boys Town

FATHER FLANAGAN SEES
THE REALIZATION OF
A THIRTY-YEAR DREAM



Boys Town designs, a few of which are shown here, are the work of Leo A. Daly Co., Omaha, Nebr., architects.

Buildings, living quarters completely Bryant Winter Air-Conditioned



A dream that began thirty years ago with a young priest and five homeless boys is nearing reality with the construction of a three-million-dollar addition at Boys Town, ten miles from Omaha, Nebraska.

When completed, Father Flanagan's Boys Town will be able to provide accommodations for one thousand boys, more than twice the number now being cared for. The new addition includes twenty-five cottages of the type shown in the larger illustrations above, each of which will house twenty boys of high school age; a grade school and a high school, both completely equipped with motion picture apparatus for visual education; a fully-equipped trade school; a field house, athletic fields and swimming pool; an administration building and all other facilities necessary to the proper care of destitute boys of every race and creed.

Besides these living and educational facilities, Boys Town's nine hundred acres include great farm lands and its own herds of dairy and feeder cattle, as well as

sixty acres of vegetable gardens. Here farm and dairy training are provided for boys who are so inclined.

All buildings and living quarters at Boys Town are equipped with Bryant BA-88 Winter Air Conditioners. The BA-88 is made in seven sizes with outputs up to 200,000 BTU per hour. Bryant Heater Company, 17825 St. Clair Avenue, Cleveland 10, Ohio . . . One of the Dresser Industries.

bryant
GAS
HEATING



LET THE PUP BE FURNACE MAN

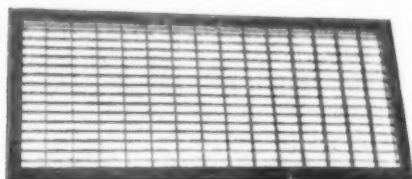


Setting FLOOR REGISTER STANDARDS FOR STRENGTH and DURABILITY



**No. 400 TRUSSTEEL
FLOOR REGISTERS**

These are the strongest and finest floor registers you can install for your customers. The extra-sturdy mesh is constructed to bar ladies heels, yet gives you 82% free area. Multiple valves are assembled the **SHORT WAY**—a U. S. FIRST—for easier operation and to prevent wall discoloration.



**No. 405 TRUSSTEEL
COLD AIR FACES**

These are the matching cold air returns—equally sturdy and durable in construction as the 400, with the same type of mesh and unusually life-like wood grain finish.

Send for 1947 Catalog.

UNITED STATES REGISTER CO.
BATTLE CREEK, MICHIGAN
MINNEAPOLIS • KANSAS CITY • ALBANY

With the Manufacturers

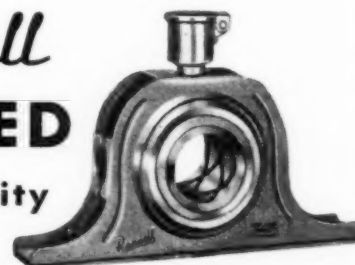


The first class in the 1947 series of Timken Silent Automatic Service Schools convened recently at the new Timken Silent Automatic plant at Jackson, Michigan. Schools will be held weekly throughout the summer. All schools will be under the direction of C. F. O'Malley, TSA Service Manager, and Instructor Byron Spees.

Classrooms are completely equipped to provide every aid for teaching TSA installation and service methods.

Subjects include Combustion Methods, Hearth Types, Ignition Systems, Oil Tank Installation, and many others. Highlights of each week's class includes a visit to the Timken Experimental Laboratory and a tour of the new Jackson plant.

Randall
PROVED
Dependability



Costs No More!

When you use Randall Pillow Blocks, you get dependability that's been *proved* in millions of installations—still you pay no more. Prices are competitive.

Features include: self-alignment, self-lubrication, sturdy housings, accurately-finished bearing surfaces, low maintenance costs and quiet operation.

Insist on the *best* for that next job. Insist on Randall!

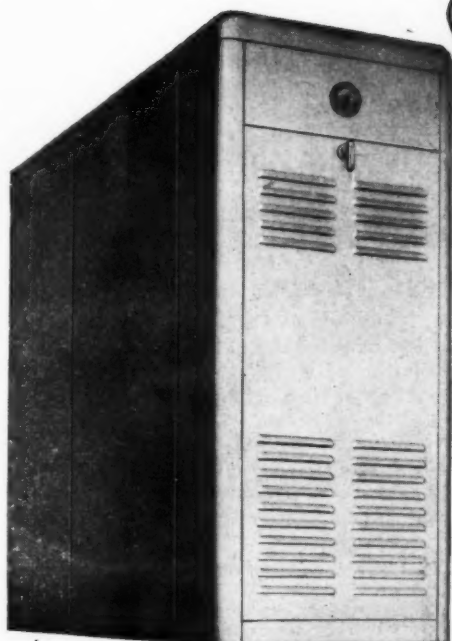
Write for new Catalog 47.

Randall Graphite Products Corporation

609 W. Lake St.

Dept. 711

Chicago 6, Ill.



GREATER Sales AND Profits
THROUGH FULL REPRESENTATION IN
THIS QUALITY LINE OF
WARM AIR HEATING EQUIPMENT



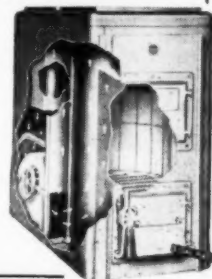
**ORDER THESE
UNITS NOW!**

COUNTERFLOW GAS, OIL, & COAL FORCED AIR UNITS

A compact, double bodied, forced air heating unit designed to provide greater fire travel over increased heat absorbing surfaces.

Completely enclosed in attractive enameled casing are combustion chamber, heat saver, blower, motor, filter, humidifier, controls and burner. An ideal winter Air Conditioning Unit for home or building installation.

PERMAWELD CONSTRUCTION, applied to all Certified furnaces means an all steel body, electric arc-welded into one complete and durable unit. Through Perma weld construction gas leakage is overcome and installations made simpler.



WATCH OUR ADS FOR ANNOUNCEMENT OF NEW UNIT COMING SOON!



R-G GRAVITY FURNACE

Certified's all steel round gravity type furnaces are now available for immediate shipment. This popular model is built in sizes from 22 in. to 36 in. For full details on this R-G model, write for Bulletin 1144-C.

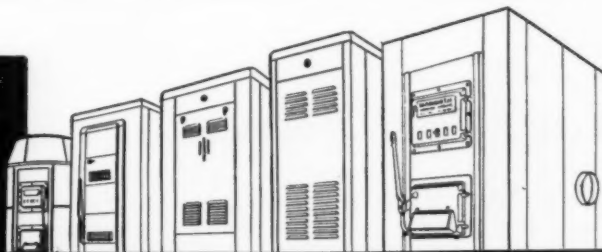
**SEE YOUR JOBBER FOR COMPLETE DETAILS ON CERTIFIED
EQUIPMENT**

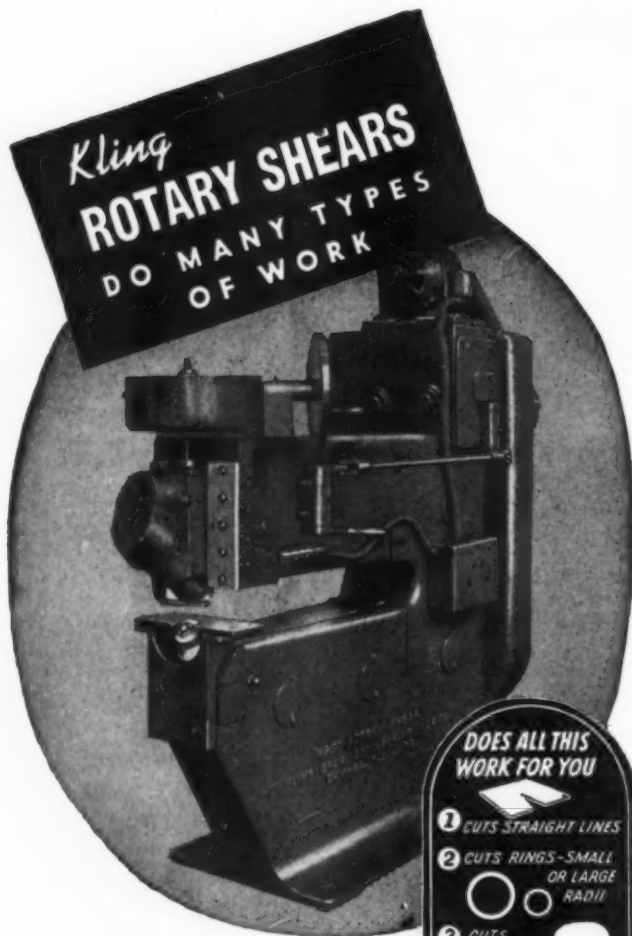
CERTIFIED FURNACE CO.

DIVISION OF STAINLESS & STEEL PRODUCTS COMPANY

1000 BERRY AVE.

ST. PAUL 4, MINN.





Yes, and With Hairline Precision

Rapid operation . . . Hairline Accuracy . . . the use of Kling Rotary Shears marks the latest development in cutting mild steel, and sheet metal, up to 1-inch with amazing savings in time, labor, and production costs.

For exacting projects (see illustration at the right), no single unit of metal-working equipment does so many different things so clearly and efficiently as does the Kling Rotary, pictured above.

In metal working plants, automotive, aviation, home appliance, and other industries, where work of this character is being done, — this machine is held in high regard for its versatility and economy of operation.

This great usefulness is the result of half-a-hundred years of engineering experience which prospective buyers, with reason and respect, applaud.



KLING BROS. Engineering Works

1325-AA No. Kostner Ave., Chicago 51, Illinois
EXPORT DEPT. 1111 South Ferry Building, New York 4, N. Y.

DOES ALL THIS WORK FOR YOU

- 1 CUTS STRAIGHT LINES
- 2 CUTS RINGS—SMALL OR LARGE RADII
- 3 CUTS CIRCLES
- 4 MAKES FLANGES
- 5 CUTS INSIDE HOLES WITHOUT CUTTING IN FROM EDGES
- 6 JOGGLES & OFFSETS
- 7 CUTS ODD SHAPES
- 8 BEVELS OF ANY ANGLE
- 9 CUTS REVERSE CURVES
- 10 BEADS & U'S

ALL WITH Hairline PRECISION

With the Manufacturers



Hess Warming and Ventilating Co., Chicago, recently announced the acquisition of a streamlined new plant at 1855 South 54th Street, Cicero, already equipped and in full operating order.

With the installation of improved, highly specialized equipment, with the swift-operating efficiency of the new single-story plant and private railroad siding, it is expected that production will be tripled on all Hess lines—the Hess furnaces, the Hess medicine cabinets, Hess Grain Driers.

A subsidiary of the Hess Plant No. 1 and General Offices, located at 1211 South Western Avenue, the opening of the new Hess factory marks a step in the development of one of Chicago's pioneer industries—established in 1873.

Approved "Grant Wilson"

ASBESTOS FURNACE CEMENT

in the **C-ZONE**

COMBUSTION

ZONE

Assures gas tight and smoke tight joints in the C zone—thoroughly fireproof—smokeless—odorless and acid proof—Easy to work and "stays put."

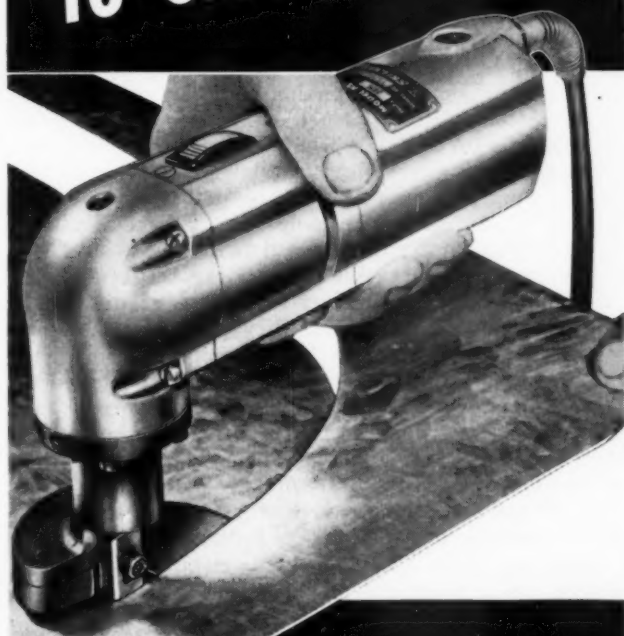
Approved and Accepted by the Better Jobbers and Dealers—also by the installers who work with it every day.

Another Approved Grant Wilson Product.

Insist on it  *Your Jobber has it*

141 W. JACKSON BLVD. CHICAGO 4, ILLINOIS

**CUT
16 GAUGE STEEL**

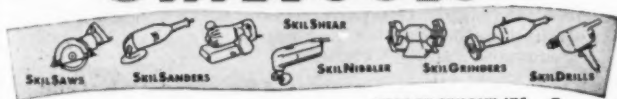


**FASTER...
EASIER with a
SKILSHEAR**

• SKILSHEAR *cuts* through tough metals . . . quickly, easily. Handles comfortably and cuts cleanly in any position because SKILSHEAR is only 9 in. long, weighs only 5½ lbs. It's a fast-cutting . . . cost-cutting tool on countless jobs in your own shop. Ask your distributor for a demonstration.

SKILSAW, INC.
5033 Elston Avenue, Chicago 30, Illinois
Factory Branches in Principal Cities

**ELECTRIC PNEUMATIC
SKILTOOLS**



MADE BY SKILSAW, INC.

THE WISE FURNACE CO.

Announces

*a new
cast iron
oil burning unit*

**COMPLETE WITH BURNER
AND READY FOR**

**IMMEDIATE
DELIVERY!**

Wise scores again with a brand new heating plant entirely designed for the modern warm air heating market. It's a beautiful new cast iron oil burning unit, complete with the burner and made in four sizes for either gravity or forced air installations.

Since it's a Wise product you *know* from experience it will provide the ultimate in clean, healthful, automatic heat and, of course, it's been proved time and again that a good installation is your best salesman for continued business and profits.

Better investigate it today . . . we'll be glad to send you more information upon request.

THE WISE FURNACE CO.

AKRON 8

OHIO

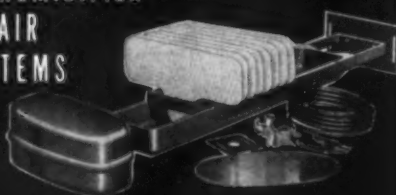
Be A
Blower Dealer



Convert any gravity furnace into a modern forced-air heating plant with the Viking Blower Package. Engineered for quick, easy installation . . . quick, certain profits for you.

ANOTHER **Viking** PROFIT BUILDER

SERIES 1100 HUMIDIFIER
FOR FORCED AIR
HEATING SYSTEMS



A companion package that makes your conversion job a complete WINTER AIR CONDITIONING SYSTEM. Designed to fit all types of furnaces. Complete data in Bulletin 349.



Viking No. 11 KIT

AUTOMATIC WATER
PAN FILLER FOR USE
ON ANY FURNACE

A complete package. Carry one at all times. Quickly, easily installed. Helps make an inspection trip a profitable call.

Viking



AIR CONDITIONING CORP. 5600 WALWORTH AVE.
CLEVELAND 2, OHIO

Association Activities . . .

Indiana State

THE Indiana state association—Sheet Metal and Warm Air Heating Contractors' Association of Indiana, Inc.—in their May, 1947, Bulletin, call attention to the tax situation. Manufacturers, wholesalers and retailers, they say, have cause for real concern over the high-speed expansion of their income-tax-avoiding competitors, the co-operatives. The co-ops are manufacturing, wholesaling, retailing, banking, drilling, refining, mining, and have stores in many cities, doing billions of dollars of business now and expanding rapidly. The co-ops pay income tax only on the small amounts distributed as dividends on stock, and exclude from taxable income the large amounts of profits that are paid out as patronage dividends, generally in stock or script, they point out. Ninety per cent of co-operatives have become corporations and the association believes they should be taxed as corporations and their stockholding members should then pay the tax that the law requires of other stockholders. Tax-paying businessmen recommend that co-ops be required to operate under equal rules of competition, tax and otherwise. Further information may be secured by addressing the Indiana Tax Equality Committee, Room 315-38 N. Pennsylvania St., Indianapolis.

F. E. Anderson.

Indianapolis

SEVENTY-FOUR men, representing 52 heating contractors and supply houses in Indianapolis met on April 9th at the Capitol Furnace and Fittings Company, Indianapolis, and elected officers and a Board of Directors for the newly formed Warm Air Heating and Contractors Association of Indianapolis. Officers are:

President.....	Wm. E. Garber, Jr.
Vice-Pres.....	Ralph E. Mullen
Secretary.....	D. S. McClosky

Eight directors were elected for a two-year term and four for a one-year term, but after the first year, all the directors will be elected for a two-year term. These directors are:

Charles Buck	Frank Sheer
M. A. Connell	Frank Stewart
E. E. Gaston	T. M. Rybolt
Charles J. Novack	F. S. Gombert

A provision in the by-laws was made for sponsor members who enjoy the full privileges of members with the exception of voting power, and who agree to sponsor one meeting of the year, providing the meeting hall and serving a dutch lunch. Seven sponsors, already admitted to membership are:

The Capitol Furnace & Fittings Co.
Peerless Foundry Company
Tanner & Company
Triangle Sheet Metal & Supply Co.
Nemec Supply Company
Indianapolis Machine Company
Plumbers Supply Company

F. S. Gombert, Chairman Pub. Com.

Association Activities . . .

Detroit, Michigan

THE Detroit Association of Warm Air Heating and Air Conditioning Contractors is sponsoring a 1947 boat cruise for Michigan heating and sheet metal men, their families and friends out for fun.

The D & C Navigation Company steamer will leave the Detroit Third street pier on Friday evening, July 25th at 7 p. m. and arrive in Harbor Springs at 7:30 p. m., Saturday; leave Harbor Springs at 1:30 a. m., Sunday and arrive at Mackinaw Island at 7 a. m.; leave Mackinaw at 12 noon Sunday and arrive in Detroit at 7 a. m. Monday.

The following rates are per room including 2 persons and complete with federal taxes:

Outside stateroom	\$ 88.54
Toilet stateroom	\$ 98.68
Toilet bedroom	\$111.32
Bath bedroom	\$123.96
Veranda bedroom	\$136.62

Mail reservations to Marshall H. Vanassche, 19331 Mt. Elliott, Detroit 12.

Dayton

THE Dayton Sheet Metal, Furnace & Roofing Contractors Ass'n Inc., held their Annual Meeting April 3, 1947. This was a dinner meeting held at McCrabbs' Luncheon Room. Dinner was served at 6:30 P. M. with 20 in attendance.

The regular order of business was called at 8:00 p. m. by President Karl M. Gochoel.

Four members were elected to the executive board: E. D. Busch, Leo Budde, Artie A. Smith, V. J. Wehner, after which the executive board elected their acting officers.

Leo Budde, president, succeeding Karl M. Gochoel; Al J. Hoersting, vice president; A. J. Hoke, secretary-treasurer. Directors: E. D. Busch, Artie A. Smith, V. J. Wehner, newly elected; M. B. DeBord, W. W. Barnes, hold overs, for another year.

A new measure is being prepared as an amendment to the present warm air heating ordinance to control the installation of stokers and conversion burners by securing a license through the heating ordinance. The measure will soon be ready for presentation to the city commission.

A. J. Hoke, Sec'y-Treas.

Taft-Hartley

(Continued from Page 57)

that is a party to a collective bargaining agreement can't terminate or modify the agreement unless the union serves a 60-day written notice on the employer and performs certain other steps required under the act.

A union now cannot require an employer to pay for work that is not performed; however, present interpretations question whether this will eliminate feather-bedding practices—for instance, one employer paying for work performed by a member of another craft.

MANUFACTURERS!

Viking

EFFICIENCY



**Puts Quality
in Your Furnace**

Viking Blower assemblies are recognized by the entire industry as the most efficient, trouble-free unit ever developed. And, the complete unit costs less than one you, as a furnace manufacturer, could build or assemble yourself.

Viking Dependable Humidifiers

Add Winter Air Conditioning to Your Furnace



**SERIES 1300
FOR POPULAR
SIZED FURNACES**

A complete float operated humidifier especially designed for small plenum installations. Incorporates the famous Viking Top Seat float valve for longer, trouble-free service under all conditions. Bulletin 349 contains complete data.

Write Today for

Viking

BLOWER CATALOG

Contains complete specifications on blower units for any size furnace at any capacity.



Viking

AIR CONDITIONING CORP. 5600 WALWORTH AVE.
CLEVELAND 2, OHIO

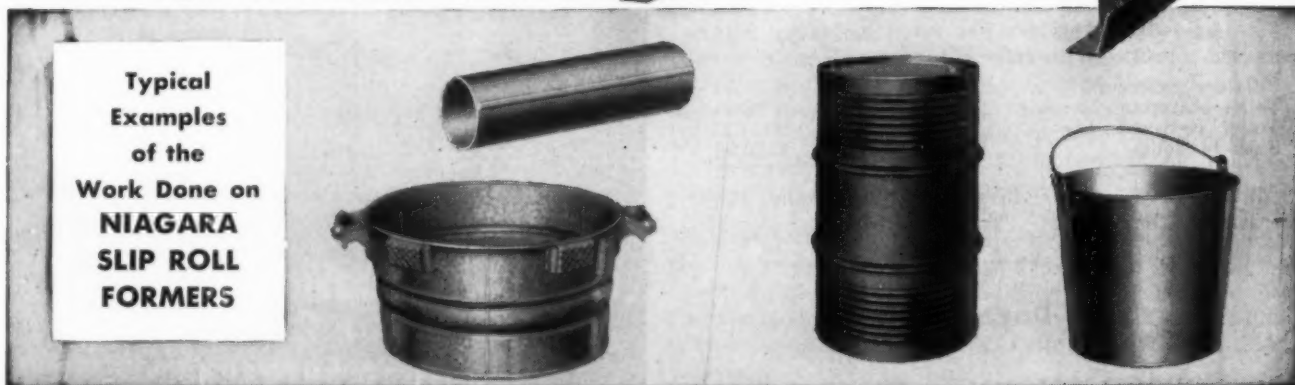
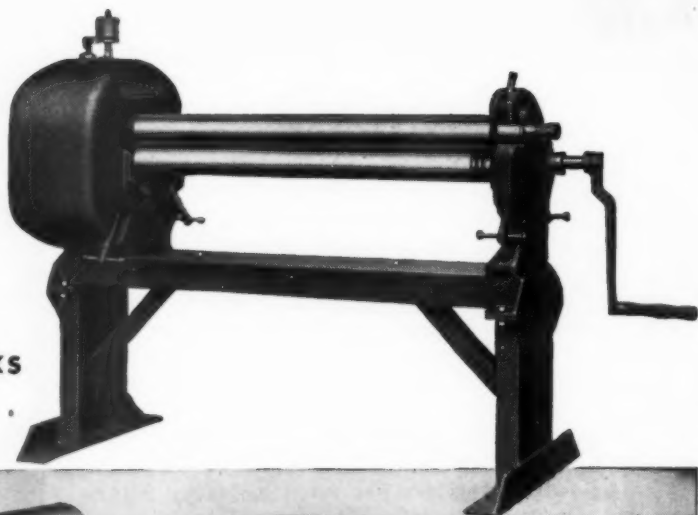
● Sheet metal men make a great many things, including money, with Niagara Slip Roll Forming Machines.

Niagara design makes them easy to operate because the end of upper roll swings forward so that formed cylinders can be withdrawn without distortion. Upper roll opens horizontally, eliminating lifting of roll or work. Trigger release speeds up unlocking, opening and closing upper roll.

Made in various sizes and capacities,—hand and power operated.

NIAGARA MACHINE AND TOOL WORKS **BUFFALO 11, N. Y.**

District Offices: New York, Cleveland, Detroit



IT'S BALANCE THAT MAKES A PROPELLER



A FAN is no better than the balance of its blades. Full air volume—quiet operation—smooth running—long life... all depend upon how well balanced is the blade.

Burden Blades are scientifically balanced—by an entirely new and exclusive electronic balancer perfected by Burden engineers. All guess work is eliminated. Any dynamic or static vibration is corrected by means of the Burden balancer before each propeller leaves the assembly line.

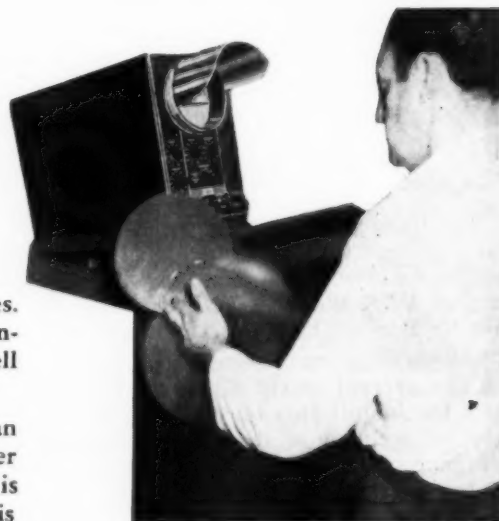
When you use Burden Blades, you use *balanced* blades that give the utmost in efficient operation with less operative horse power.

Write Now for New Burden Literature

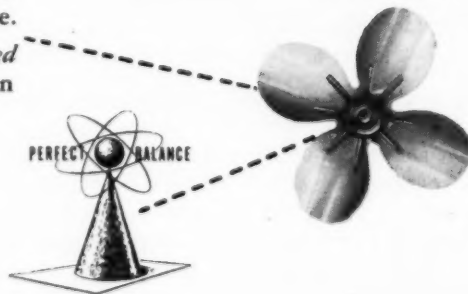
burden COMPANY

1000 N. ORANGE DRIVE • LOS ANGELES 38, CALIF.

Canadian Representative: SILVER BROTHERS CO. 7-11 Mary Street, Hamilton, Ontario



Pat. Applied For



Future interpretation may also prove it is no longer necessary for an employer to pay employees who report for work but are sent home because the work cannot be performed. If the law, later, is construed to ban "call-in" pay, unions probably will demand a revision of such clauses to require that employees called in must be given a specified number of hours of employment.

As stated, all of the above is no more than a preliminary analysis which only time can prove correct or not. But one thing is certain, this act is probably going to be on the statute books for a long, long time and the country is going to have to learn to live with it. This should not be an impossible or difficult task for industries like ours, providing both parties meet the new rules with forbearance, intelligence and cool headedness. No law, in itself, can be a guarantee of industrial harmony. If this proves to be a fair law, industrial peace will flourish, if it is nourished with complete sincerity and good will on the part of both management and labor.

This sincerity and good will—also intelligent labor relations—have already had the groundwork laid in the labor-management relations established by representative groups from both employers and employees in our industry. It is to be hoped that these good relations will continue and that both parties will seek to insure industrial peace by accepting the basic intent of this new law—equal rights for all parties.

Kruckman

(Continued from Page 59)

mitments swiftly to an absolute minimum, and use our energies in finding a solution to our home problems. The probability that such a program may bring on a tremendous economic collapse, at home and abroad, they acknowledge as possible, and they face it resolutely with the sense that something like it must come some time before the world settles down to the long pull that will lead to a plateau of normal life. This division of thought does not follow party lines.

After Effect of Labor Veto

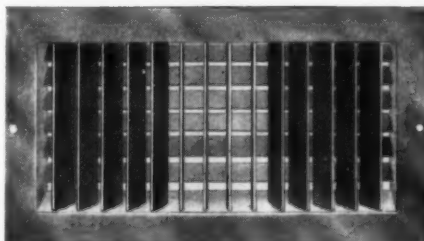
In fact, party lines fundamentally had little to do with the Senate veto of the Labor Act. That vote was complex, influenced by great numbers of obscure reasons as well as specific causes. It may strike you as strange that here in the Capital the overriding of the veto is regarded as bad business for the Republicans and good politics for the Administration. Many Senators are regarded as having written finis to their careers, and many Congressmen are not expected to survive the next election. The cities and industrial areas demonstrably have dominated the vote the past 20 years. The most thoughtful observers here expect the Goetterdammerung of the Republican party at the next election, either partially or completely, and they expect something new will come into our political makeup, a coalition that will represent the Conservatives to confront the Liberal element, which is most vocally represented by Labor.

YOU CAN GET IT QUICKER FROM STEWART

QUICK FACTS ABOUT HIGH VELOCITY OUTLETS MADE BY STEWART

The styles illustrated are typical examples of improvements in the Stewart line of Outlets, Wall and Baseboard Registers, Scoopaires and Radiator Fronts. All have been re-designed for smarter appearance, better diffusion and more flexible adjustment. The Stewart line is competitively priced and includes a wide range of popular types and sizes of outlets for air-conditioning, heating and ventilating. Special types and sizes can be made to your specifications.

PROMPT DELIVERIES ON STANDARD SIZES



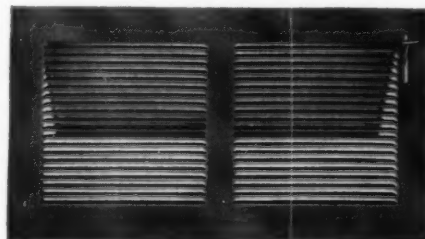
STYLE DDV

(2 Banks)
Individually
Adjustable
Face and
Rear Bars

Style DDV is one of 8 variations of Stewart High Velocity Outlets. By means of a detachable key, all bars are adjustable for directing air straight and at various right-left or up-down angles. Style DDV has vertical face bars and horizontal rear bars. Style DDH (not shown) has horizontal face bars and vertical rear bars. This type of outlet is made in popular sizes with or without lever-operated, multiple volume valves. Matching intakes are available. OUTLETS CAN BE SUPPLIED TO FIT CONTOURS OF CABINETS FOR ROOM COOLERS.

STYLE 91

Lever-operated
Single Damper
Wall Register



STYLE 91 is from the series 70-90 of Wall and Baseboard Registers made with single dampers, or multiple-valve dampers, both lever operated. Face bars of the 90 series are horizontal and set down at a 22 degrees angle. Face bars of the 70 series are vertical, set straight. Setting keys are furnished for user to alter bar settings. Matching, fixed bar grilles are available.

Send for literature and prompt quotation on your requirements

STEWART MANUFACTURING COMPANY

INCORPORATED

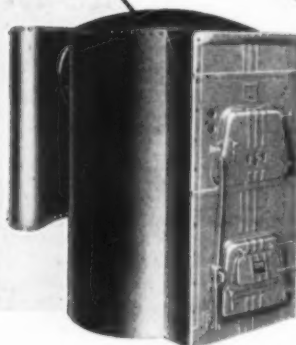
612 Bloomfield Avenue

Bloomfield, N. J.

G series cast iron furnace.
All parts assembled before
shipping. Extra-large one-
piece radiator. Ten year
guarantee, grates included



**Yes-
PREMIER
Is Accepting
Orders for
These Popular
Gravity
Furnaces**



SL series steel furnace.
Leak-proof riveted and
welded. Fire brick
lined.

That's right—you can order these high quality PREMIER Furnaces now—and GET them! We are giving pretty good service on these two furnaces now, and are pushing our production hard to maintain at least a moderate stock of each model, for quick shipment.

Because of future uncertainties in securing materials, we cannot guarantee that we'll be able to supply all the PREMIER furnaces that the trade is going to demand. We are determined, however, to do all we can to fill our dealers' requirements.

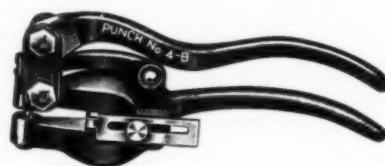
Get in touch with PREMIER regarding these popular, coal burning gravity furnaces. We will be glad to quote you and tell you exactly what delivery you can expect on your order.

PREMIER FURNACE CO
DOWAGIAC, MICHIGAN

PREMIER
THE YEAR 'ROUND LINE

It is more than obvious that some branches of Government itself, strangely enough the Department of State to a marked extent, are honeycombed with extreme radicals who are fanatically sincere in their faith in the ideology of Communism. It is difficult to determine whether they would support Russia against their own country; their enthusiasm for Communism is almost a religious belief in a philosophy that is expected to make the abundance of the world, materially and otherwise, more evenly available to everyone, rather than a submission to a political system. This may explain the eel-like manner in which the people of the State Department work to induce us to level our tariff barriers. For a reason this correspondent has literally not been able to understand, they oppose all suggestions that we should require the nations whom we help to pay us for our loans or grants in the raw materials they possess which we do not have. The Malone Committee of the Senate in its hearings has developed a list of ten or twelve basic raw materials which we either have in very scant supply or do not possess in any quantity. Some of them have a very definite bearing on your industry. This committee, for instance, is quite convinced that the present highly ballyhooed presumed scarcity of oil is a fake, that we have an overabundance of oil at home, and that the scarcity has been created by a sort of system of sabotage which keeps tankers in port instead of moving them with cargo from place to place. They tell you this oil lack, which they call a synthetic scarcity, stems from the plan to bring the Arabian oil into this country, instigated by American oil operators in collusion with the British, who have a great stake in the

A REAL *Time Saver*



The No. 4B PUNCH
by *Whitney*

This punch is accepted by leading contractors and dealers as a real time-saver in the shop and on the job. Men who use it every day know it can't be beat for clean, fast punching. Has a capacity of 1/4" through 16 ga., weight 3 pounds, 8 1/2" in length, depth of throat, 2". Complete tool includes three punches and three dies of specified sizes with die adjusting key.



WHITNEY MFG. CO.
636 RACE ST. ROCKFORD, ILL.

Mueller Climatrol "Pre-fab" Duct Systems are available again

use Mueller
Climatrol
Pre-fab
Fittings to

- ✓ save time
- ✓ cut costs
- ✓ protect profits

Yes — the good news is true! You can now get delivery in limited quantities on Mueller's patented Climatrol "Pre-fab" duct systems — the fittings that simplify your job, save your customer money, and protect your profits!

Mueller Climatrol Pre-fab Systems save your profits

— because you know your net cost for materials in advance. You order only what is on the Mueller Climatrol Take-off work sheet — there are no "extras" afterwards to add unexpected costs.

Mueller Climatrol Pre-fab Systems save your time

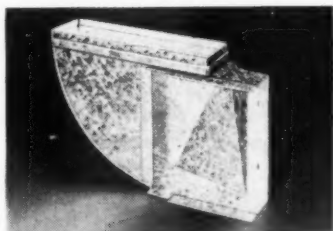
— because the material is delivered to the basement ready to install. "Made-up" fittings permit quicker assembly on the job, and free you from laborious balancing after installation.

Mueller Climatrol Pre-fab Systems save on costs

— because the use of properly designed Mueller Climatrol duct requires less material. The installation of complete, made-up systems is simple and quick — can be handled easily by any competent workman.

On your next job, install Mueller Climatrol Pre-fab fittings. This means increased profits for you. Write for additional information.

Mueller's patented Climatrol take-off fittings save 2 inches at each side-branch take-off (a typical advantage of pre-fabricated fittings). This take-off may be installed within standard joist spaces . . . gives smaller, neater trunk lines . . . requires less material.



L. J. Mueller Furnace Company

2010 West Oklahoma Avenue • Milwaukee 4, Wisconsin

M U E L L E R

Climatrol

D-81

REG. U. S. PAT. OFF.



AVAILABLE!

CONTRACTORS—Yes, VITROLINER CHIMNEY LINER is now available in limited supply for lining old or new masonry chimneys—insuring long life and protection against acid bearing CONDENSE-

ION. Ideal for oil or gas fired heating plants because Vitroliner is made of heavy gauge steel completely coated inside and out with acid resisting porcelain fused into the steel at 1575° F. to prevent corrosion. Vitroliner drains the condensate harmlessly away into the ground preventing deterioration of brick work.

VITROLINER will correct DEFECTIVE LINING, SMOKE BACK, LEAKY BRICK JOINTS, and POOR DRAFT.

VITROLINER has been used for the past 18 years and is proven through a long field record.

DEALERS WANTED A PROFITABLE BUSINESS

You can quickly build up a thriving business lining chimneys. We invite correspondence from reliable dealers who can maintain Vitroliner chimney lining stock —contact and service installations in cities. Write today for literature and prices.

Write for Further Details.

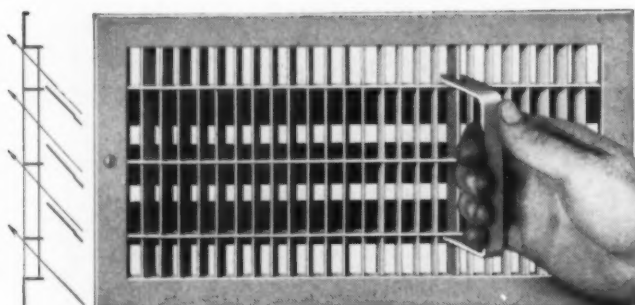
Condensation Engineering Corporation

122 SO. MICHIGAN AVE.

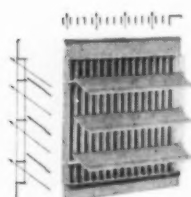
CHICAGO 3, ILL.

INDEPENDENT

"Fabrikated" WALL GRILLES WITH DEFLECTING VANES



Style 321-A grille
with deflecting vanes



Rear view showing
adjustable deflect-
ing vanes



ACCURATE and positive com-
pound deflection of air flows
can be readily secured with these
"Fabrikated" grilles. Directional ad-
justments may be made when grilles
are installed; or grille bars and vanes
may be adjusted after installation
to meet unforeseen or changed
requirements.

Each grille bar and each deflecting
vane is adjusted *individually* with
a special two-pronged tool included
with each shipment. Locking of
grille bars and vanes is not required
because they are held firmly in
place — no vibration — no rattle.
Write for complete details.



Always Leading — Always Progressing

THE INDEPENDENT REGISTER CO.

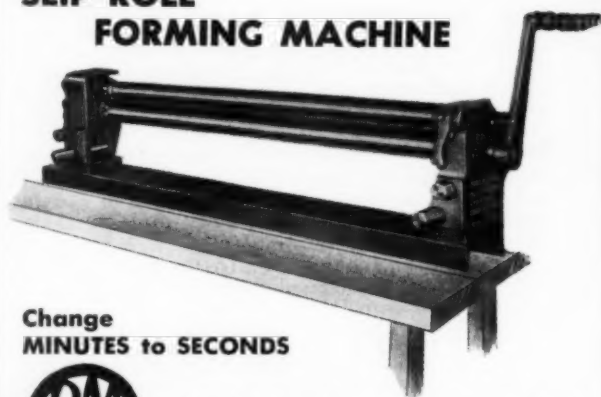
3747 E. 93rd STREET • CLEVELAND, OHIO

Arabian oil fields. Much of this is expected to come out in hearings during July. In contrast with this purely selfish motivation you run into the philosophy long spearheaded by Mordecai Ezekiel of the Department of Agriculture, who urges that our abundance should be made available to all the world to lift the standards of living of the rest of the world, even though the process may bring our living standards down. Senator George W. Malone of Nevada would achieve a comparable result but would not permit our living levels to be depressed, by the application of a power in our tariff laws which he calls the Flexible Tariff. This power enables the President to keep tariffs high on competitive products from abroad, made by people in low-living-standard countries, but would permit him to lower the tariffs in proportion to the increase in production costs abroad which would mean that living standards in foreign countries are rising and price competition with our products would gradually be equalized.

Several chiefs of various sections of the Government recently were sent to various parts of Europe to bring back impressions of conditions and needs. Each of them emphasize the gloomy picture of devastation and utter destruction and the absence of any beginnings of rehabilitation. Almost invariably they tell you there is a tremendous demand for durables, hardware, metal goods, heating equipment and appliances, but there is no money or other means among most of the people of the different countries to pay for the goods. In Germany there is an extremely limited production of textiles and small goods. Eighty per cent of these

RIVERSIDE

SLIP ROLL FORMING MACHINE



Change
MINUTES to SECONDS



Jobs that used to use up several minutes can now be done in a few seconds with a Riverside Slip Roll Forming Machine. All adjustments for gauge of metal and curvature of the sheet are made from the front. There is no need to reach around in back to adjust rolls. Another feature of this machine is the new radial adjustment which minimizes flattened area of rolled sheets regardless of curvature. Furnished in both 37" and 31" roll lengths.

RIVERSIDE MACHINERY CO.

SHAKOPEE, MINNESOTA

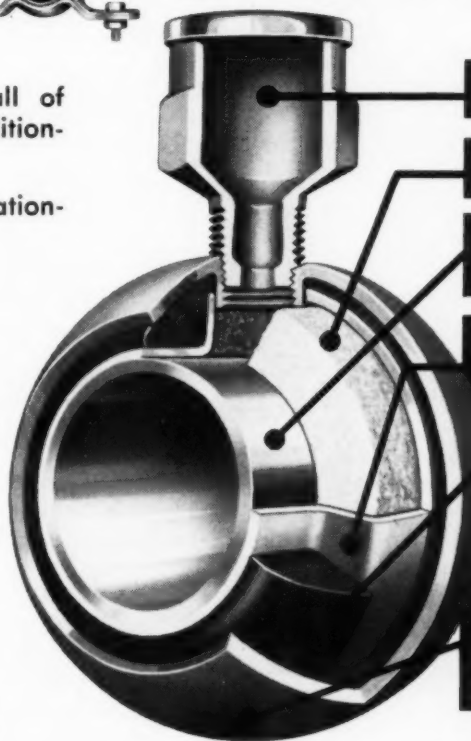
TRIANGLE PILLOW BLOCK

No other bearing provides all of these advantages for air conditioning equipment:

1. Quiet, shock-absorbing, vibrationless operation.
2. Perfect self-alignment.
3. Self-lubrication over long periods of service.
4. Scientific design for compactness and minimum obstruction to air flow.

Tell us your needs and we will send illustrations of various types of mountings, specifications and complete information.

TRIANGLE MANUFACTURING CO.
392 Division St. Oshkosh, Wis.



Large oil cup keeps wick saturated for years of operation.

Oversize felt wick feeds oil to bearing.

Porous bronze bushing feeds lubricant from wick to shaft as needed. Easily replaceable.

Steel retainer sleeve holds bushing, cushion and wick in proper relation.

Thick resilient oilproof cushion supplies a vibration-absorbing element between bearing and housing. Impervious to oil or hardening action.

Pressed steel ball formed around inner assembly holds parts rigidly in position and makes an oil tight seal. Assures perfect alignment through ball-and-socket action.

**Over a third of a Century
FAITHFUL PERFORMANCE**

**KRESKY offers future
profits to DEALERS**

A pioneer among oil burners Kresky finds such an unprecedented demand today that we are forced to limit shipments to old established dealers. Nevertheless new franchises are being granted now to farsighted dealers who see in Kresky's present oversold condition the promise of future opportunity. ★ The versatile Kresky line is a year round money maker due to its wide applications— heating, cooking and industrial. It includes Conversion Burners, Floor Furnaces, Forced Air Units, Range Burners and Water Heaters. *Write for Kresky Dealer Plan.*



**Oil
BURNERS**



*Listed by
Underwriters'
Laboratories, Inc.*

KRESKY MANUFACTURING COMPANY

Pioneers in Oil Burning Equipment Since 1910

PETALUMA, CALIFORNIA

HEATING • COOKING • HOT WATER • INDUSTRIAL

GOERGEN-MACKWIRTH Cyclone Separators



for collecting
**DIRT,
DUST,
SHAVINGS**

● If dirt, dust, shavings or other useless or harmful particles are created in your manufacturing process, a Goergen-Mackwirth Cyclone Separator will remove and segregate them efficiently and economically. The complete range of sizes available in Cyclone Separators makes it easy to select the exact size for your requirements. Special types and sizes can be designed for individual needs.

Goergen-Mackwirth Cyclone Separators require less horsepower for the fan operation because their offset outlet and clockwise rotation within the collector body greatly reduce the resistance loss through the collector. Their design eliminates the back-pressure found in ordinary separators.

Ask to have one of our engineers survey your problem and submit recommendations. Or write telling us what you want to do and we will quote on the separator needed to do the job.

Goergen-Mackwirth
COMPANY, INC.

817 SYCAMORE STREET, BUFFALO 12, N. Y. Phone: Cleveland 6661
SPECIALISTS IN THE MOVEMENT AND CONTROL OF AIR

wares must be exported to pay for occupation costs. The maker must turn his goods over to the Occupying Government, the Occupying Government sells the wares and keeps the returns. The picture you get broadly is that Europe is a shambles, daily falling into a greater decay, and its people sinking deeper and deeper into a morass of depression and despair, incidentally letting go more and more of those formalisms in life which spell civilization. You get the impression that in wide areas of Europe the inhibitions which make organized society work are rapidly disappearing. There seems only a very thin partition between what now exists and barbarism. You also get the impression that Europe is a live prospect for the indoctrination which Russia supplies when there is War and Want.

Tax Reduction

The word from the most authentic source is that in any future tax adjustment, probably in January, the ceiling on income taxes will be held at 50 per cent overall, and that the excise taxes will be expanded, meaning that excises may be placed on many products now entirely free and remote from this impost. Obviously, what the powers-that-be in the Congress have in mind is that a Federal sales tax as such would be very unpopular, but that you can call a sales tax an excise tax and get away with it without stirring up much trouble. If the guess of this correspondent is right, there will be few articles in general use in homes that will avoid excise. Broadly speaking, Congressman Knutson and his associates apparently still have the Robin Hood theory in taxation of taking

FOR USE ON EVERY ROOF

ELATERITE

MINERAL RUBBER COATING

... available from

PROIE & COOGAN

There's plenty of roofing business for the aggressive contractor these days. Schools, garages, stores, homes, etc., all present a ready and lucrative market and all can be covered to the same high standards with ELATERITE. Here's a tough, lasting, roofing compound which flows smoothly and evenly, leaving an ebony black coating, completely poreless and water-tight. Elaterite seals all cracks and crevices and is unconditionally recommended for roofs of metal, gravel, or composition.

Write us today for literature and in the meantime look around for these highly profitable jobs. When you get them, we'll supply your needs promptly.

PROIE & COOGAN HEATING CO.

WHOLESALE DISTRIBUTORS FOR INDOOR
COMFORT SUPPLIES • ROOFING MATERIAL

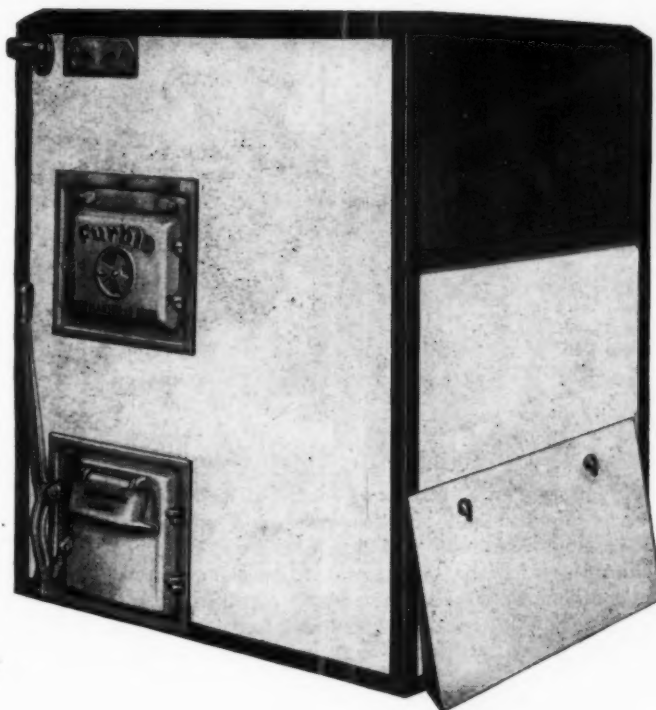
6117 BROAD ST.

PITTSBURGH 6, PA.

MOntrose 9300-01

... ever try to gild a lily?

That's a pretty tough job since it means heaping superlatives on an item that's just about perfect anyway. That's exactly the way we feel about this new Furblo Winter Air Conditioning unit. We engineered it to perform to the highest standards year after year, and designed it to harmonize with the most modern basements. We *know* it will give you dollar for dollar value... so what else can we say about it? Of course we might make clear that it's been *built around your needs*, too. Our years of experience in building fine blowers has shown the need for improvement in warm air heating and we've incorporated all the lessons learned in the new Furblo in an honest effort to provide you with the finest possible winter air conditioning unit. You'll be proud of your installations and money ahead when you sell your customers the new Furblo. Write us now for literature.



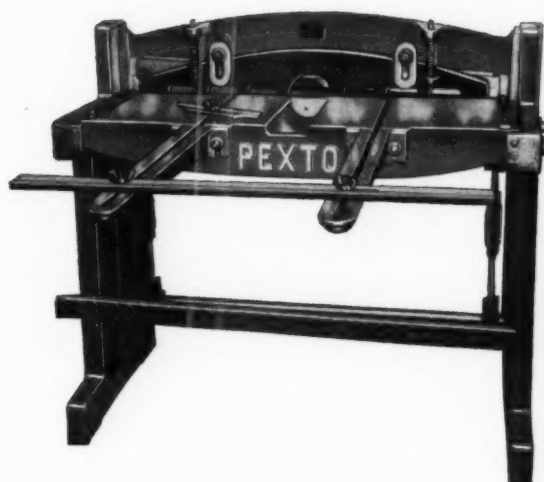
FURBLO CO.
HERMANVILLE MICH.

THE OLD RELIABLE ... PEXTO

SINCE 1785

#137

FOOT SHEAR
IS NOW AGAIN
AVAILABLE



The famous PEXTO Foot Shear... the Foot Shear that never was equalled... "went to war" and now is back — IMPROVED.

THE PECK, STOW & WILCOX CO. SINCE 1785
SOUTHINGTON, CONNECTICUT U. S. A.



Furnace Cleaning Is YOUR Job!

• Complete equipment for cleaning chimneys from the basement not the roof — is standard Red Streak Equipment.



Don't say you are too busy—with a Red Streak Furnace Cleaner and your supervision a couple of college boys home on vacation can clean a lot of heating plants. Dirty furnaces should be cleaned now. Replacements and repairs can come along later, but don't let that furnace rust away this summer. Try a Red Streak 5 days free. Get busy on cleanings.

National Super Service Co., Inc.

1944 N. 13th St.

Toledo 2, Ohio

National Super Service Co. of Canada, Toronto, Ont. Vancouver, B. C.

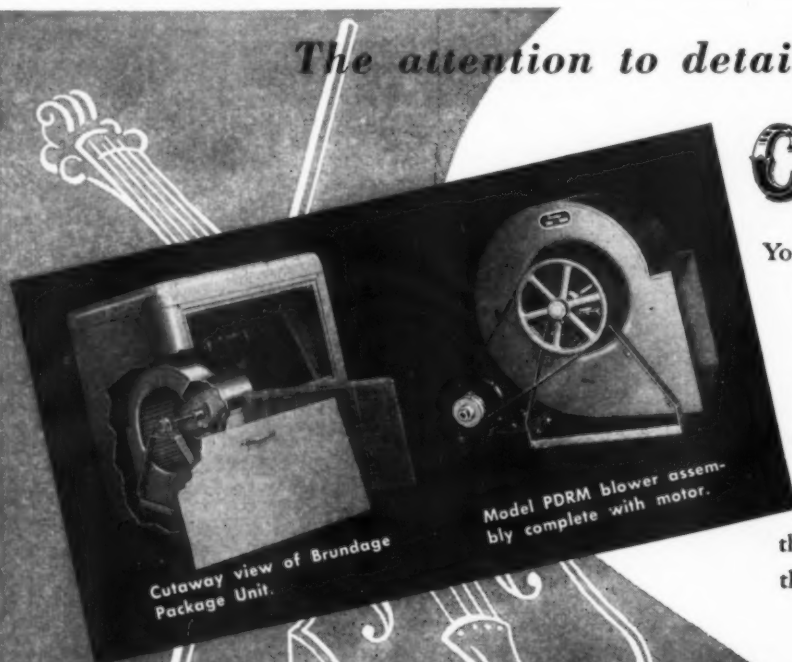
from the rich and giving to the poor. Marriner Eccles, who heads the Federal Reserve Board, probably the most influential man in the Administration, is fighting with all his might and main to retain the Regulation W, which restricts installment buying. It is doubtful whether or not the Congress will vote the extension. Eccles is a razor-keen mind with force and directness.

The latest report from NHA announces that inadequate supplies of sheet steel and fractional horsepower motors continue to bedevil your industry, which was revealed in the fact that production has decreased by something like 10,000 warm air furnaces. Producers, however, are credited with accumulation of sizable inventories. The Housing Expediter has been under fire from all sides for making the same kind of equivocal report which threw doubt on the public utterances of his predecessors. He claimed there would be a million new homes this year, but it was found on analysis that at the utmost the number could not exceed 700,000 and would probably be below. The Expediter jazzed his figures up by counting in several thousands of new homes started last year but not finished until this year. They tell us now that building will decline later this year. The housing shortage is global. The pinch embraces Britain, France, Australia, South Africa, Holland, Belgium and many Asiatic countries. Housing has been incredibly bad in Russia for years. The Federal Reserve Board says: "More spending units are uncertain and undecided about entering the housing market now than a year

The attention to detail that marks....

CRAFTSMEN

You'll find none of the sloppy workmanship that characterizes so many products today . . . none of the "that's good enough" attitude . . . here at Brundage. Brundage Blowers and Package Units are made to the same high standards by the same high class craftsmen that have always made Brundage products the fine products of the field. When you want the quality that means longer life and lower operating costs, specify Brundage Blowers and Package Units.



Cutaway view of Brundage Package Unit.

Model PDRM blower assembly complete with motor.

STRADIVARIUS

THE
Brundage
COMPANY

Blower Specialists
Since 1919
KALAMAZOO 11,
MICHIGAN

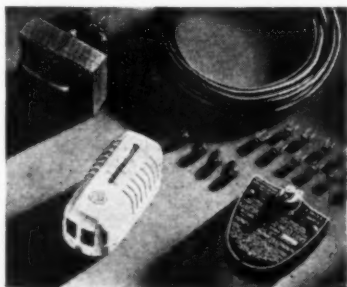


Add **SUMMER SALES...**

All Oil Heater Owners Welcome the Comfort and Savings Offered by

AP **DEPENDABLE AUTOMATIC ACCESSORIES...**

Here's a ready source of extra sales and profits — all the folks in your community who own Vaporizing Burner Oil Heaters! Show them how these A-P AUTOMATIC ACCESSORIES will pay for themselves in oil savings, greater convenience, steadier heating.



AP **Thermostatic Heat Regulator Set Model 240-ED**

Adds THERMOSTATIC Temperature Control convenience and economy to any heater using A-P Model 240-DR, UR, or YR Oil Controls—made since 1939. Easily installed set includes Electric Conversion Top, Thermostat, Transformer and accessories.



AP **OILIFTER — for Automatic Fuel Handling**

Avoiding fuel handling and messy "Bucketing" of fuel oil in the home The A-P OILIFTER, draws oil from remote bulk storage tank as far away as 100 feet or three stories. It can be mounted on ANY FUEL OIL BURNING APPLIANCE. It's a great convenience in any oil-heated home.

Write for details, prices and sales help on these fast-turnover A-P AUTOMATIC ACCESSORIES

BE SURE your new heater lines use A-P DEPENDABLE OIL CONTROLS — for faster sales, greater customer satisfaction.

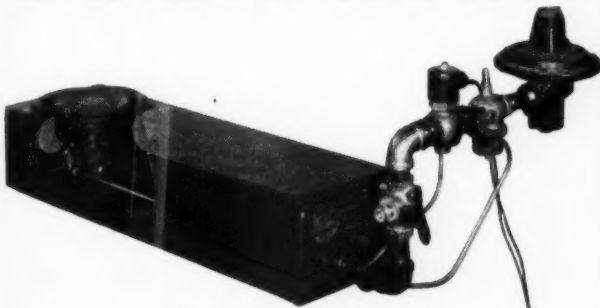
AUTOMATIC PRODUCTS COMPANY

2452 NORTH THIRTY-SECOND STREET, MILWAUKEE 10, WISCONSIN

AP **DEPENDABLE Oil Controls**

DESIGNED TO ELIMINATE SERVICING

JOHN ZINK



— Luminous Flame —
CONVERSION BURNER

— for —
Industrial and Domestic Installations

BURNS —

- Natural Gas
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Luminous Flame
Radiates Heat 2 to 3
Times Faster Than
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Available for Vertical or Horizontal Firing

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Available for immediate delivery

New furnaces cannot be furnished in sufficient quantities to meet present demand.

Order from Peerless today repair parts for all makes of furnaces and boilers. Also, fittings, registers, blowers, electric controls, and other warm air heating requirements.

If you do not have copy of our latest Parts Catalog, send for it today.

Pioneers in warm air heating equipment for almost half a century.

PEERLESS FOUNDRY COMPANY

1853 Ludlow Ave.

Indianapolis 7, Indiana

ago. It is estimated at the beginning of 1947 at least 1,000,000 spending units planned to buy newly built houses in 1947. Almost half the prospective 1947 purchasers of newly built houses would spend more than \$6,000 but no more than one-quarter planned to pay as much as \$10,000. For houses of all types, they planned to pay about \$6,300 on the average, which is about 25 per cent more than the average payment contemplated for 1946. The lowest income group spending units have almost completely withdrawn from the housing market and spending units with incomes of \$5,000 or more also show a tempering of intentions to buy houses, especially in relation to their actual purchases of houses in 1946. In 1947 spending units with veterans as members account for almost half of the prospective house purchasers."

Construction Boom

(Continued from Page 66)

maintenance of normal inventories by wholesale and retail dealers.

2. Reduction of those material prices now badly out of balance with the rest.

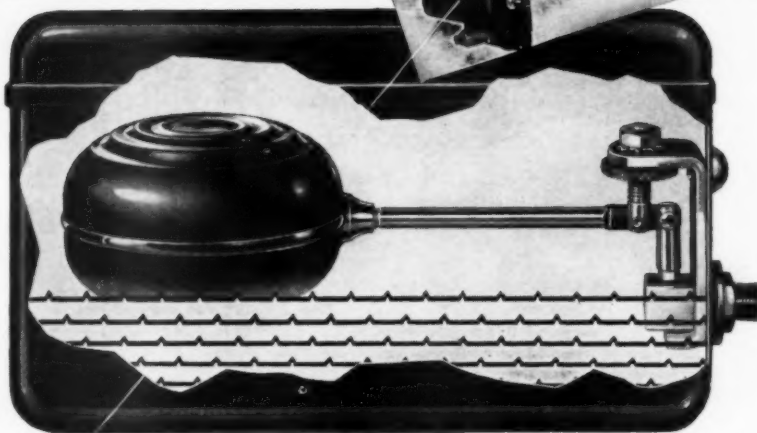
3. Return of competition as the price regulator. There is not only competition between different producers of the same materials, but also competition between materials; for example, lumber competes with cement blocks and brick.

Head and Heart of *Skuttle* HUMIDIFIERS ... this fully automatic **Float Control Valve!**

Simple • Durable • Adjustable • Service-Free

This patented adjustable Float Control Valve is just one of many important selling features found exclusively in Skuttle Automatic Humidifiers. Extremely simple in design and durably constructed of heavy non-corrosive materials, it's head and heart of the entire unit.

All moving parts are completely machined ... no stampings ... to assure a close-fitting, fool-proof assembly and efficient, service-free operation. Accurate adjustments can be quickly and easily made to maintain the water at any desired level. And the valve itself shuts off at up to 200 pounds pressure under actual operational tests.



More Sales Ahead for Clean, Comfortable
HUMIDIFIED AIR!

Write today for the complete Skuttle story!

*Patents Pending



Skuttle Mfg. Co.

4099 BEAUFAIT

DETROIT 7, MICH.



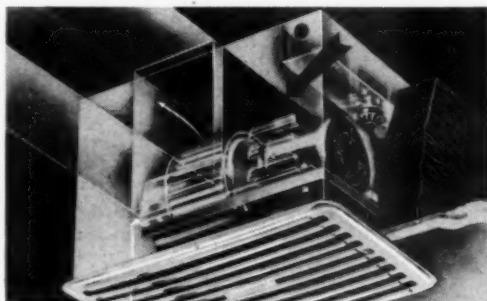
**THIS MONTH SELL HER
THE VENTILATION COMFORT OF THE
CLIPPER CEILING BLOWER**

Every kitchen is hottest in midsummer. Show the housewife how she can keep it C-O-O-L and clean with a Clipper and you'll cash in *Right Now* on this profitable business.

These patented small room ventilators are specially designed for home kitchens, bathrooms, dens... as well as for ticket booths, X-ray rooms, toilets, clinics—in fact any small room. They are mounted in the ceiling between joists and vented outside—they trap and expel unwanted air, heat and odors the instant they rise. Only an inconspicuous "dripless" ceiling grille is visible, yet motor and blower assembly are instantly removed without tools for service.

Unlike any other equipment, the Clipper Blower is a complete packaged ventilator in which the motor is entirely removed from the air stream—away from all contaminated air. This means greater efficiency, longer life and easier servicing.

Ask your jobber for details of the Clipper Sales Plan or write us for complete information.



Only the Clipper has this patented inner wall construction. Hot, greasy air never contacts motor or wiring. This means a cooler, longer-life motor, less service and more satisfied customers.

TRADE-WIND MOTORFANS, INC.
5703 SO. MAIN ST., LOS ANGELES 37, CALIF.

**Renew cracked,
broken firepots
with
FIRELINE
... profitably, and
in a few hours!**



Why dismantle a furnace or wait for castings? The profitable way for you is the fast way—Fireline. You can completely renew any cracked or broken firepot with Fireline in a few hours' time. You make the best use of available manpower. And the profit percentage is high. Here's the whole story:

What is Fireline? Fireline is a high-quality refractory moulding material in moist, plastic form which is installed as a complete lining entirely around the firepot. The fire bakes it

into a durable, one-piece lining which withstands temperatures up to 3000 deg. F.—hotter than any domestic furnace can attain.

What Does Fireline Do? Fireline repairs cracked and burned-out firepots—without new castings—without dismantling the furnace. Fireline seals the castings gas-tight. It prevents the escape of gas, odors, and soot into the building. It produces a hotter fire because it radiates and reflects heat across the entire fuel bed which means better combustion.

How is Fireline Installed? Fireline is installed through the furnace door, easily and quickly. You pound it into place with a hammer and trim it smooth. That's all there is to it. Fireline is ready to use—nothing to mix—nothing to add. The average 22-24 inch furnace requires 100 lbs. for a complete lining.

Every Furnace Needs Fireline! Even furnaces in good condition need Fireline because it protects good firepot castings and effects fuel savings. For steel furnaces, it can be moulded to any shape to replace or patch the refractory tile.

Fireline is stocked by leading jobbers everywhere. Ask your jobber for prices and discounts on Fireline heating specialties or write us for free bulletin and descriptive literature including tables to tell you quantities required for furnace jobs of various sizes.



Ironset Furnace Cement

The high-quality cement for setting up new furnaces and re-cementing old ones. Withstands higher temperatures. Will not crack, bloat, shrink, or blister. Gives a high degree of permanence to your work. Try it on your next job and watch it produce other customers for you. Packed in 5 and 10-lb. cans.



Fire-Hearth Castable

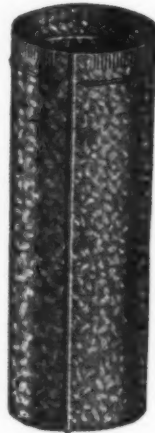
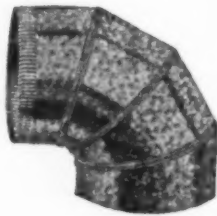
The Ideal refractory for setting stokers, sealing tuyeres, and pre-cast combustion chambers. Also for making furnace baffles. Easy to use. Just mix with water, pour into place, and smooth with a trowel. Sets without heat. Packed in 50 and 100-lb. bags.

FIRELINE STOVE & FURNACE LINING CO.
1816 Kingsbury St., (Dept. G.), Chicago 14, Ill.

FIRELINE
HEATING SPECIALTIES

WARM AIR PIPE and FITTINGS

Warm air pipe and fittings are very important parts of your furnace installations, and the difference between a good job and a bad one is often determined by the kind of pipe and fittings used. Don't take chances on bad customer recommendation . . . install fittings from Ralph Supply and make your jobs *good* from the start. We make an honest effort to supply the finest obtainable parts, they'll FIT the first time, they're dependable and competitively priced. Write us today for more information on our complete line of warm air pipe and fittings . . . we'll send literature at once.



RALPH SUPPLY, INC.

P. O. Box 188

Wadsworth, Ohio

4. Reduction of any unusual profit margins that were charged in the shortage period.

5. Elimination of all abnormal excess costs that arose in the shortage period.

6. Increased productivity of construction labor; better coordination and improved managerial efficiency on construction jobs.

7. Increased willingness of contractors to tender lump-sum bids and to guarantee completion dates.

In short, the cure for the slowdown will be a speed up of productivity and efficiency, speed up of new cost-reducing construction methods, including mass fabrication on site as developed by some home builders.

All of these things are currently taking place, and considerable progress has been made. Complete elimination of excess costs, if possible, would bring costs of fireproof and semifireproof construction and possibly heavy engineering construction down to a range between 50 and 65 per cent above prewar. Such a scale of costs should appeal to investors as fair and reasonable for the postwar recovery era. Reduced prices of lumber and lumber products, paint and paint materials, plus elimination of excess costs, uncertainties and inefficiencies might well bring the costs of single-family houses down to something near the same range.

Conclusion: some quite important elements of present construction costs must be reduced. Others are at satisfactory levels. The extent of cost deflation that is necessary is not so great as to require a deep or prolonged recession in construction.

THE BIGGEST AIR COOLER MARKET IN HISTORY *Is Ready and Waiting*

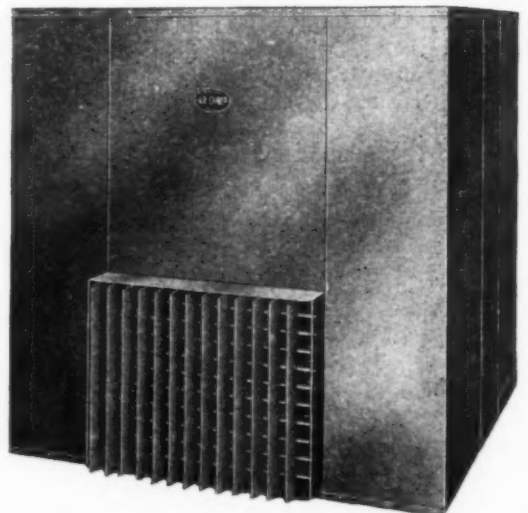
The **AIR-CHAMP** *Evaporative Cooler*

**WILL GET YOU YOUR SHARE
OF THIS HUGE MARKET**

Already a great success with more than 4,000 satisfied users in its present 38 state distribution area . . . which is proof of design . . . proof of performance . . . proof of value . . . and PROOF that AIR-CHAMP is a money maker.

OUTSTANDING FEATURES INCLUDE:

- GALVANIZED STEEL CONSTRUCTION
- TURBOSPRAY WATER DISTRIBUTING (ELIMINATES PUMP TROUBLES)
- DOUBLE MAT ARRANGEMENT TO ELIMINATE WATER PULL THROUGH



With our new expanded plant in operation, AIR-CHAMPS are available for IMMEDIATE DELIVERY in the following sizes: 5,500 cfm, 7,000 cfm, and 10,000 cfm. FREE ADVERTISING HELPS ARE YOURS FOR THE ASKING. For complete information write today, address correspondence to Dept. AA.

ALTON MANUFACTURING CO.
Cooling and Ventilating Equipment

1112 ROSS AVENUE • DALLAS 2, TEXAS • PHONE RIVERSIDE 2491

Presenting the "SILENT"

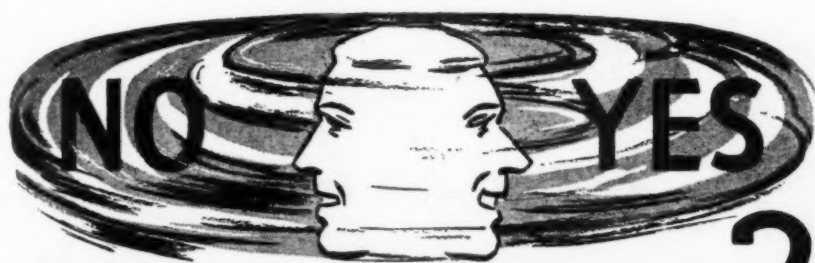


STEEL-WELD *Oil Burning* WINTER AIR CONDITIONER

A modern automatic heating plant for your most discriminating clients. Features keen beauty and smooth performance skilfully engineered to provide maximum comfort. The "Silent" is a real money-maker for aggressive dealers.

Please write for literature.

MANUFACTURED BY **JACOB BRENNER CO.**
FOND DU LAC WISCONSIN



A·R·A SHEETS?

Do you know DEFINITELY when and how much Sheet Metal you can get?

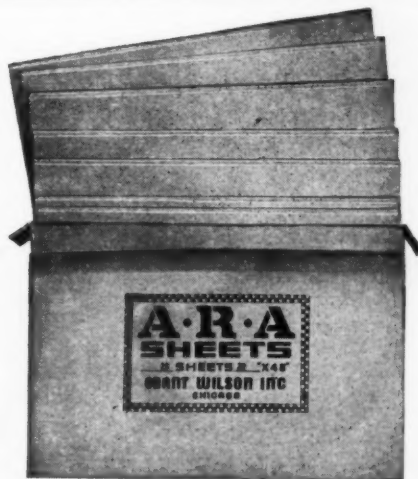
Schedule your jobs to use A. R. A. Sheets—now available from your local jobber—and keep a stock of A. R. A. Sheets on hand for that next job.

A. R. A. Sheets are **WORKABLE**, easy to cut with a pair of snips, easy to **ROLL** into round pipe the same as you would sheet steel.

A. R. A. Sheets are moisture-proofed, smooth, clean, strong, and attractive neutral color finish, capable of withstanding hard usage. You can depend on every square foot of A. R. A. Sheets as being uniform and of the highest quality.

Asbestos clad A. R. A. Sheets are tough yet flexible—rigid but not brittle—fire-proofed and water-proofed—will not dry out, crack, crumble or chip, have a high insulating value (K. .45 B.T.U.) and good sound-deadening properties, no metallic rattle.

Write today for the free 16-page illustrated booklet No. 90-A.



Here is the package of A.R.A. Sheets that make it the most convenient sheet to ship, stock or carry on the job. The Sheets are always clean and in good condition.

CARTON CONTENTS

20 Sheets 33"x48" Per Carton

SHIPPING WEIGHT

Approximately 100 lbs. per Carton

Get Genuine A-R-A Sheets from Your Jobber

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View of our Chicago Office and plant.



ROLLED ANGLE RINGS

In our enlarged modern plant we are fully equipped to turn out accurately rolled angle rings to your specification—complete circles or any part thereof—with or without bolt or rivet holes.

Channels, flat bars, tees, special shapes, and all types of sheet metal fabricating to order.

Write for standard sizes and discounts.

NATIONAL METAL FABRICATORS

2136 S. SAWYER AVE.

CHICAGO 23, ILL.

Is this a construction boom and bust? Logic and common sense answer "No." Sound market adjustment this year paves the way for sound recovery in 1948. Since necessary stabilization of costs could not apparently be achieved without a slowdown of construction activity, the coming of the slowdown at this time is a far better indication of economic health than would be a boom this year accompanied by further price, wage and construction cost increases.

The present sound situation could be upset by (a) political tinkering with the market, or (b) development of a panic psychology, which seems to be the object of some of the current boom and bust propaganda, or (c) economic collapse in other countries.

1947 Construction Volume

Estimates of large construction volume increases over 1946 for this year, as made six months ago by governmental agencies, F. W. Dodge Corporation and others, were over-optimistic. They assumed smaller price, wage and construction cost increases than those that have actually taken place since January 1.

It now appears doubtful whether the volume of new construction started during the current calendar year will exceed the over-all volume of 1946 starts. In view of the large volume of uncompleted 1946 projects carried over to this year and the sounder market situation that is now developing, the volume of construction completed in 1947 may very well exceed 1946 completions. But by any comparison with the peace-time past, 1947 will be a big building year.



Model
8-CD

Listed by American
Gas Association

THE MOST COMPLETE LINE OF GAS CONVERSION BURNERS

Domestic • Industrial • Commercial

Quality Products for Over 45 Years

REINHARD BROTHERS COMPANY

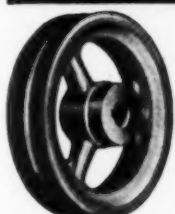
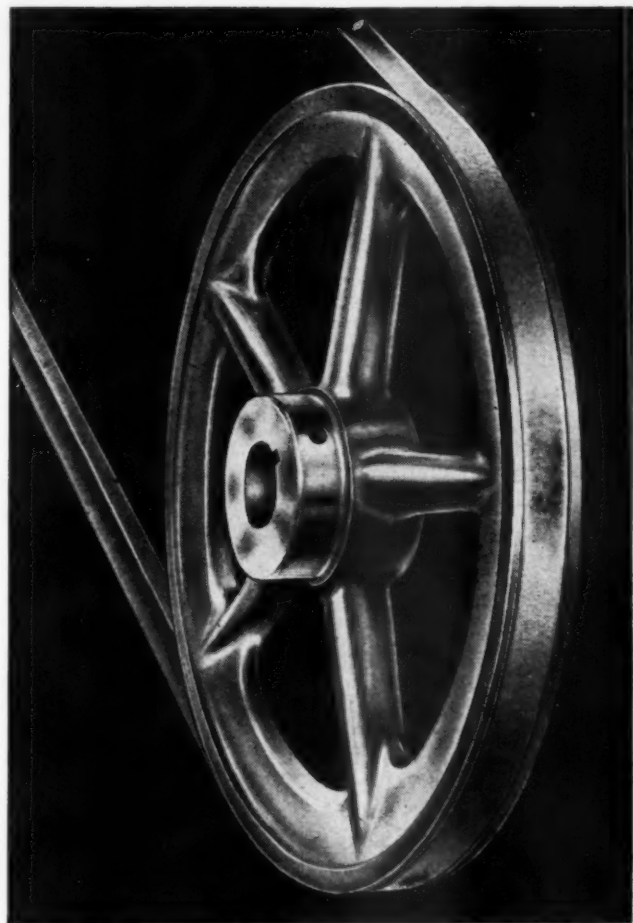
11 South Ninth Street

Minneapolis 2, Minnesota

Reinhard

Gas Conversion Burner with the Exclusive "AIR-LOCK" Principle

The Reinhard "Air-Lock" principle causes the flame to spread and reach the sides of the fire box quickly without the use of baffles, thus ensuring maximum fire travel and heating efficiency. All valves and controls are under cover—nothing shows in the basement but the neat, attractive casing.



MAUREY V-PULLEYS

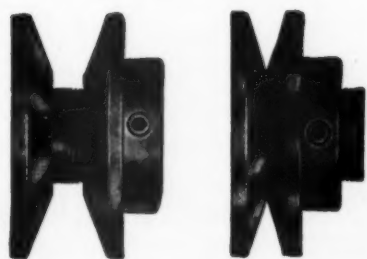
provide a L-O-N-G step toward TROUBLE FREE Performance

Our long experience in designing and manufacturing V-Pulleys, our complete understanding of their uses, and the finest materials—all are combined in making Maurey V-Pulleys the very best Pulley installations for Refrigeration and Air Conditioning systems as well as for Fans and Blowers.

For unfailing, continuous operation be sure to specify Maurey V-Pulleys.

MAUREY MANUFACTURING CORP.

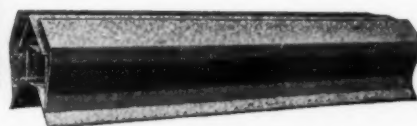
2915 South Wabash Avenue
CHICAGO 16, ILLINOIS



Make More Ventilator Sales

with the business-getting features of **Swartwout Ventilators**

for Industry



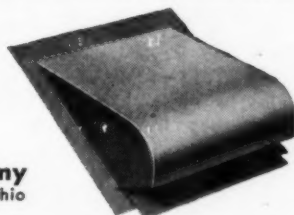
Give industrial and commercial building owners your expert help in solving their ventilating problems. You can promote a lot of profitable business by showing them the possibilities of Swartwout Ventilators. Ject-O-Valve and Airjector for efficient power air movement; Airmover and Dexter Heat Valve for large scale gravity type systems—successfully used on thousands of plants. Other types for various lighter jobs. Ask for our help on engineering problems. Send for Catalog Bulletin 319.

for Housing



Sell and install your share of these profit-making house louvers and ventilators. Most new housing construction, and all old buildings being insulated must have under-roof space ventilation. Send for Bulletin 317-C.

Swartwout Louvers with self-flashing construction—3 sizes. Also flush type, for old construction—5 sizes. Roof ventilator is a new, pleasing design.



The Swartwout Company
18615 Euclid Ave., Cleveland 12, Ohio

Swartwout
Controlled **Air Circulation**

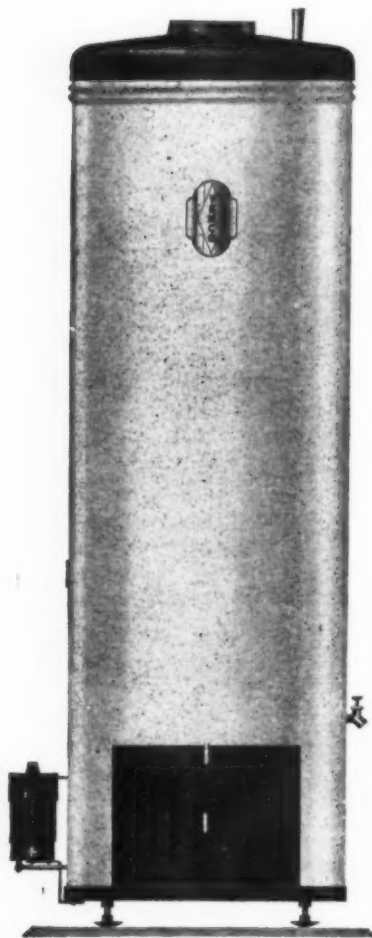
EQUIPMENT FOR EFFECTIVE ECONOMICAL VENTILATION OF INDUSTRIAL BUILDINGS

A TIE-IN THAT'S TOPS

A Champion Water Heater

Burns fuel oil. Sell it with every warm air heating plant you install. Perfect for you—perfect for your customers.

DON'T LOSE ANOTHER JOB



Sell complete home comfort—heat and hot water tool

UNDERWRITERS
LABORATORY
APPROVAL

EASY TO
INSTALL AND
SERVICE

SMUDGELESS
PILOT
LIGHT

EXTRA HEAVY
GAUGE TANK

INDEPENDENT
OPERATION

SOME OPEN
TERRITORY
AVAILABLE

INSTALL YEMCO

For summer use or all year domestic hot water—complete your line—don't lose water heating installations.

DELIVERY RIGHT NOW

Trouble-free, entirely automatic, these high quality units are fully guaranteed.

YORK ELECTRIC & MACHINE CO.
34 NORTH PENN ST.—YORK, PENNSYLVANIA

Wynnewood

(Continued from Page 73)

danger, and the complete concrete slab also is more desirable from a standpoint of a house "settling" after construction. This concrete slab foundation, utilized for the first time in this section on a large-scale project, is covered with oak flooring through the use of screeds fastened to the concrete with clips. A minimum of piping is under the slab. Nearly all are near exterior walls and go directly outside to minimize any possible repair work. All pipes are copper for more longevity against corrosion.

The Wynnewood homes are extensively weather-stripped; all have adequate ceiling insulation for all types of control, winter or summer; approximately one-third have woodburning fireplaces with gas outlets; some are equipped with central heating units and attic fans; and some have full electric kitchens, while others have gas supplying the fuel for both stoves and refrigerators.

Mirabile

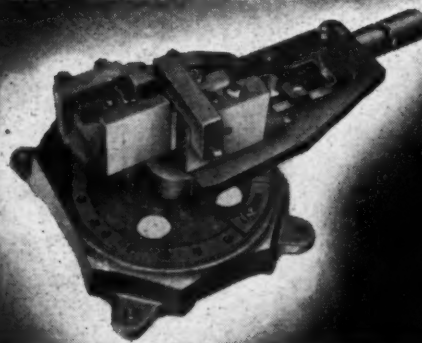
(Continued from Page 76)

door with asbestos cement, filling the space between the inner door baffle casting and the fire door.

17. When the wiring and oil piping is finished, the burner is ready to be started.

18. At this point it is advisable to install a baffle.

Presenting the JK No. 4 BAR BENDER



The complete JK Bender line is known for matchless quality and construction. Typical is the JK No. 4 Bar Bender, especially adapted to the needs of manufacturers, builders and contractors. Available in a complete range of styles and sizes, JK Benders are capable of producing a wide variety of shapes. They are easily set up for either hot or cold bending.

If you have a bending problem, be sure to specify JK always. They assure years of trouble-free, profitable performance.

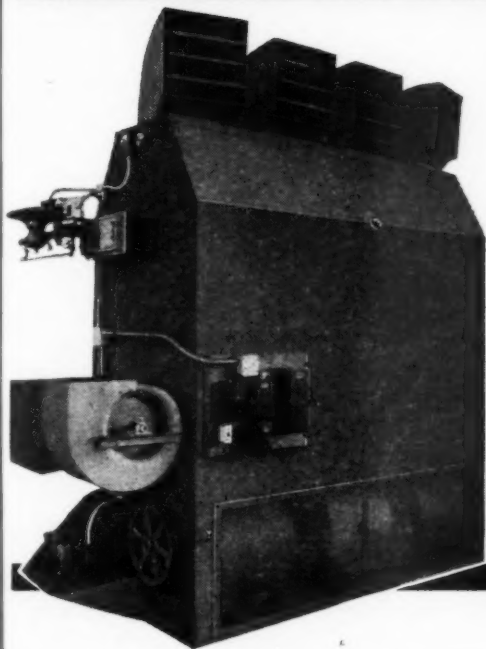
Send Today For Illustrated Catalog.

The **JAMES KNIGHTS Company**

SANDWICH, ILLINOIS

AIRTHERM DIRECT-FIRED WARM AIR HEATERS

Offer You These Six
Heating Advantages



- 1 A complete factory heating unit.
- 2 Comes to you ready to set in place.
- 3 Control system wired at factory.
- 4 Available in floor-mounted or suspended models.
- 5 Oil burners or gas burners are interchangeable to meet future fuel conditions.
- 6 Capacities from 650,000 to 1,950,000 BTU per hour.

For detailed information, write for Bulletin 801-A.

AIRTHERM
MANUFACTURING CO.

706 South Spring Ave. • St. Louis, Mo.

We Repeat—

“The time is not yet when you can have all

THE HANDY PIPE

you want . . . but our production is UP—just as far
UP as we can push it . . . and we promise you that we
are filling every possible order that facilities and
materials permit”.

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Performance is the yardstick for measuring the efficiency of any heating plant, and those that will operate year after year with little or no attention are the ones which will return you the most profit.

You're sure of top drawer performance when you install ATH-A-NOR Furnaces and parts exclusively. Over fifty years of furnace manufacturing experience guarantee you home heating plants with performance ratings and lasting qualities to satisfy the most critical clients. Investigate now . . . write for literature.

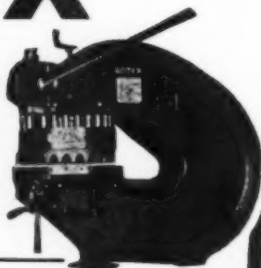
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has proved its worth in hundreds of small shops as well as in the huge plants of Douglas Aircraft, Fisher Body, R.C.A. Victor and other nationally known concerns. The Rotex 18 can do a faster, cleaner and more profitable job for you!

WRITE FOR INFORMATION



This will lower the fuel oil bills. A good baffle is important in a conversion oil burner installation.

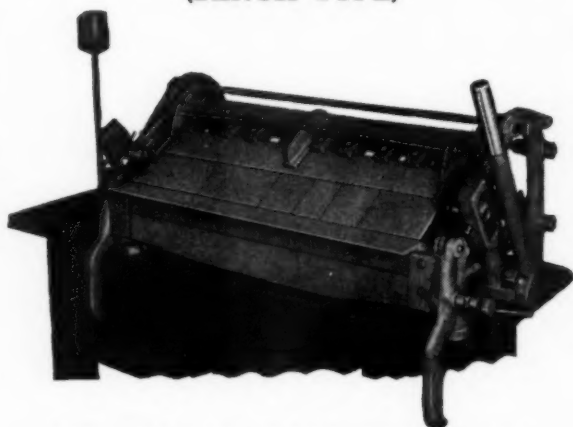
19. Check electrodes, nozzle, open air shutter part way—prime pump, oil motor and start burner. To adjust the draft regulator drill a hole or remove a bolt in the fire door and insert the draft gauge tube in this hole. Set the draft regulator to maintain .02 of an inch draft (read two hundredths of an inch) over the fire. Adjust the air and run the burner several minutes and then turn it off to "dry" the chamber walls. Start and stop the burner every several minutes (four or five starts) to permit the moisture to leave the bricks slowly. Don't drive it out by over-firing the chamber.

20. When the chamber is thoroughly dry and the moisture driven out, check the flame shape. If the burner has an 80° angle nozzle in it and the flame touches the side walls, don't increase the air to shrink the flame. Remove the 80° angle nozzle and try a 60° angle nozzle. A flame mirror is necessary to check the flame at the throat of the chamber. The flame usually starts one to two inches away from the end of the air cone.

21. With the flame mirror, check the ignition to see that the electrodes are out of the cone of spray.

22. Before leaving the job be certain that the baffle is directly over the chamber so as to deflect the heat towards the sides of the furnace walls. Never hang the baffle at such a height that it restricts the opening to the flue. Also never set it so low that it obstructs the products of combustion leaving the chamber. This

THE NEW STEWARD BOX and PAN BENDER (BENCH TYPE)



LENGTH 24"—CAPACITY 20 GA.

A SMALL BENCH TYPE BOX AND PAN BENDER SUITABLE FOR SHEET METAL SPECIALTY, RADIO, TOOL & DIE, MODEL & EXPERIMENTAL SHOPS AS WELL AS FOR LIGHT PRODUCTION.

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QUIET OPERATION

WITH THE *Am-Pe-Co Unipack Blower*

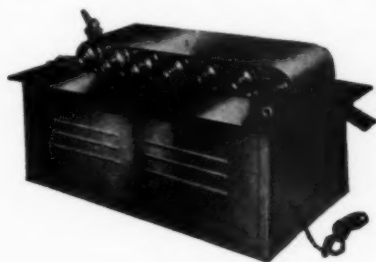
"Quiet as a Cat's purr"

Furnace blowers are much the same in construction and operation and it takes painstaking attention to detail to manufacture one that really stands out. We've been making the Unipack Blower to the same consistently high standards since 1929, it is, in fact, custom made, since we do not use mass production. Unipack Blowers will install with a minimum of difficulty and will operate for many, many seasons at top efficiency and with the very nearest approach to absolute silence. Two quickly removable service doors permit ready inspection as well as changing of filters. It's really "quiet as a cat's purr" and a little investigation on your part will convince you of it's sales possibilities. Please write us today for literature.

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SEE US FOR—

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The BARNES BETTER BILT GAS FLOOR FURNACE is enthusiastically endorsed by many home owners and builders because of the simple, quick method of installation. It's merely a matter of cutting a hole in the floor and wall furnace-size—then presto! it goes in easily and with a minimum of muss or fuss.

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standards for safety, economy and efficiency—and the ten year guarantee that insures your investment.



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Leading furnace manufacturers and skilled furnace repairmen insist upon Tharco Asbestos Furnace Cement because it has been processed, by the secret Armstrong formula, to meet every demand of easy workability, high heat resistance and adhesion. Tharco Asbestos Furnace Cement never shrinks, checks or powders when properly applied. It seals both sides of the joint making it gas tight and smokeless yet has resilience enough to absorb all normal expansion and contraction. You, too, will find that Tharco Asbestos Furnace Cement is tops in heat resistance and adhesion—and tops on every count that adds up to highest quality in furnace cement.

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condition will create a back pressure which will ruin the end of the air tube and nozzle.

Follow the baffle manufacturer's instructions.

Before leaving the job be certain that the oil burner will have sufficient air for combustion. This becomes more important with homes that are weatherstripped, storm windowed and insulated. Some homes are now being built with a vapor barrier which makes the home more air tight.

Several years ago the writer answered a customer's complaint that smoke was coming from his chimney when the burner operated. Several service men O.K.'d the job and said that the flame was clean.

As we drove up to the house, smoke was coming out of the chimney. We went down to the basement and into a small boiler room under the outside front porch.

NIAGARA

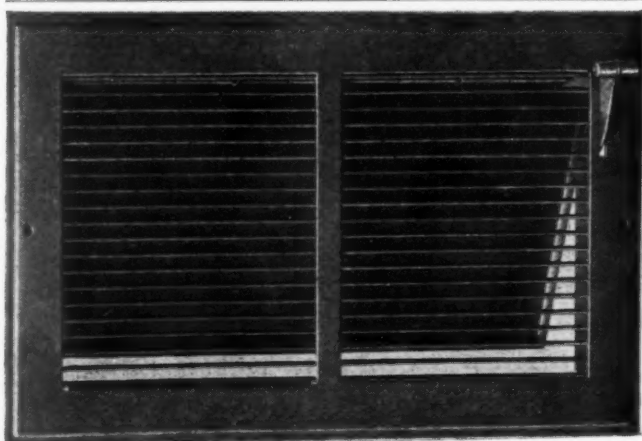
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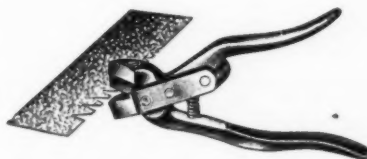
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Barber gas conversion burners, automatically or manually controlled, are tailor-made in proper sizes and capacities to fit the heating requirements of all types and sizes of round or oblong furnaces and boilers. They operate with maximum economy and efficiency, both from the heating equipment and the gas fuel, no matter what type. Barber design is widely preferred for its superiority over many competitive, experimental burners, because of its basically better combustion principle. If the owner already has automatic controls, these usually can be used with a Barber installation. The burner is the heart of the appliance. See that your conversion jobs are equipped with genuine Barber burners.

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STOVE REPAIR COMPANY**

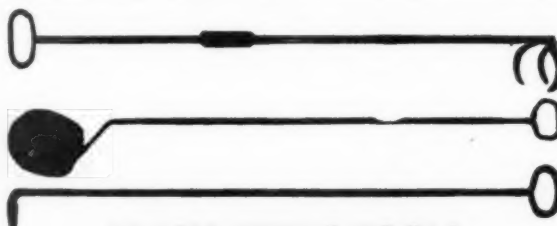
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DES MOINES, IOWA
SINCE 1869

The fire was clean but all the boiler heating surfaces were heavily coated with soot. This indicated incomplete combustion.

We noticed that the door between the basement and boiler room was weatherstripped. With the service man outside watching the chimney, I closed this weatherstripped door, and within three or four minutes the service man reported smoke starting to come out of the chimney. This indicated that the flame was being starved. We were not supplying the boiler room with sufficient oxygen for combustion.

We did not wish to leave a window open in the boiler room because this would increase the heat losses. Also, when the burner was not operating, the boiler room temperature would drop considerably. Therefore, we



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CLINKER TONGS
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Buy Adams Known Quality

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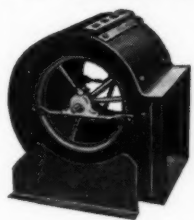
At-A-Glance readability from any direction; sizes to meet any tank requirements; sturdy, leak proof construction made to withstand high pressure; and UNDERWRITERS approval are plus values that make the Sentry gauge instantly acceptable with consumers everywhere. No intricate mechanism—easily installed. Write for complete details.

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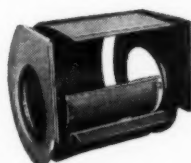
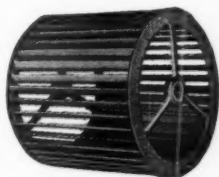
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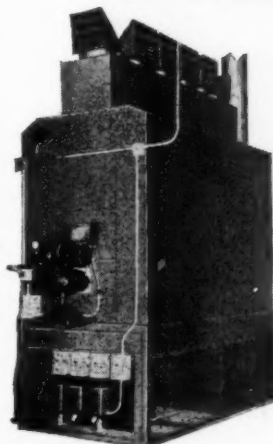
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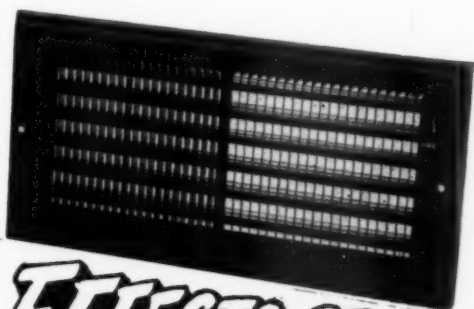
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It's easy to get a lion's share of furnace cleaning profits when you use a Grand Rapids Furnace Cleaner. Greater cleaning capacity, handling ease and practically designed groups of furnace cleaning attachments help you give better service and clean more furnaces per day at a higher profit.

Act now! Write today for
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637 Full Size Patterns



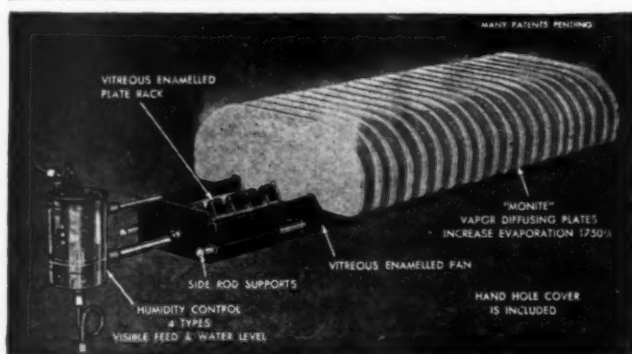
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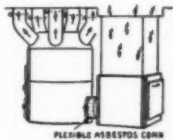
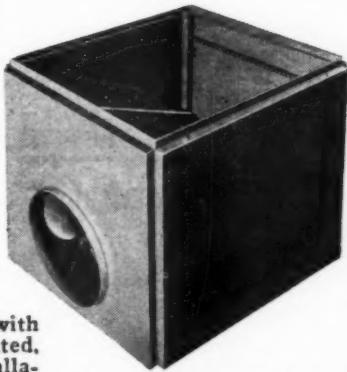
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FURNACE PIPE and ELBOWS

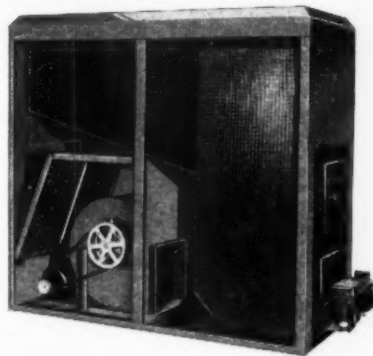
Good merchandise is more than just idle talk with us . . . we DO make a sincere and honest effort to provide you with the finest obtainable furnace pipes and elbows. Superior products are stamped at the factory with our trademark and we're sure when they leave they will REALLY adjust. No jiggling or cutting, the first try at installing them is the last . . . they'll FIT easily and permanently and save you time, trouble, and money.

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Melting Pot Ventilation

(Continued from Page 88)

Protecting the Motor

This leads to the most acute phase of this problem, motor protection. This is extreme in this case on account of the intense heat of the molten metal in the pot, and on account of the fact that this heat will be transmitted largely intact, clear up to the fan itself, when the hood door is closed and there is practically no

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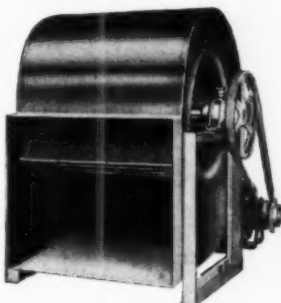
Popular Price Practical Design
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UNION MANUFACTURING CO., INC.
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Properaire BLOWERS

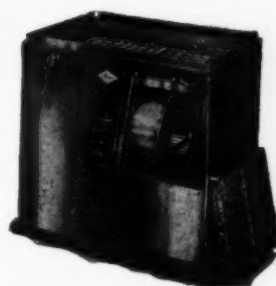
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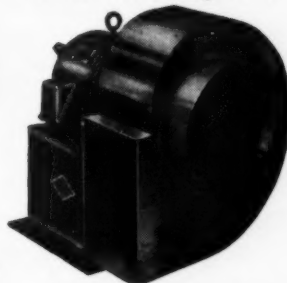


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Built for the HOME and OFFICE,
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SERIES 2000 Package Units



TYPE E Direct Drive

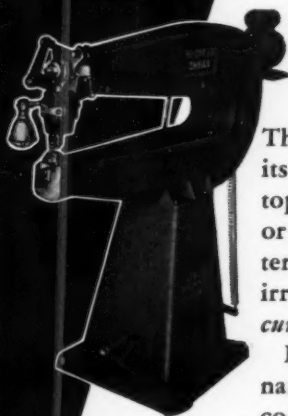
Ask Your Jobber or Write for Complete Descriptive
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GRAND RAPIDS DIE & TOOL CO.
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CIRCLE CUTTING
ATTACHMENT
Included as
STANDARD EQUIPMENT
with this Machine

- **SIMPLIFIES**
Maintenance
- **SPEEDS**
Production
- **SAVES**
Manpower



MODEL
1236
36-in. throat
12-gauge capacity.

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Green Bay, Wisconsin

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... to cash-in on the huge backlog of stoker sales! You increase your profits through faster sales, make fewer service calls by selling ECON-O-COL's complete line of precision-built, highest quality stokers. And a hard-hitting promotional program backs you up every step of the way! Details of our exclusive dealer franchise, now available in several areas, await your inquiry. Write or wire us today.



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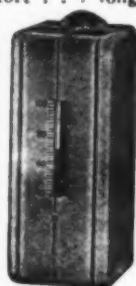
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B-22 Motor

The "Master" Mark on temperature controls means greater comfort . . . longer life . . . more efficient service for your customers . . . easier sales for you.



A-23 Plain
Thermostat



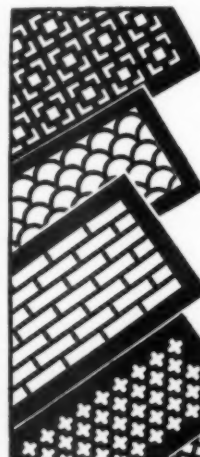
D-22 A
Regulator Switch

For over a quarter of a century, "White" has been a distinguished name in the heating industry. Master Temperature Controls are famous for their greater comfort, more efficient service and longer life . . . factors which insure complete satisfaction for your customers and growing sales for you.

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dilution of the hot fumes with cold air from outside of the hood. With the hood door closed, the heat of the molten surface will be transmitted to the air and up to the fan, minus only the heat loss due to the radiation of heat from the duct. If the duct is relatively short, this radiation will not be great. Therefore the maximum temperature of the fumes to be handled will be very high.

According to our experience, there is only one practical way to handle heat of this kind; that is with the use of a direct connected fan ventilator with the motor completely housed and ventilated with outside air; and constructed with a double cone, with the space between the two cones also ventilated with outside air.



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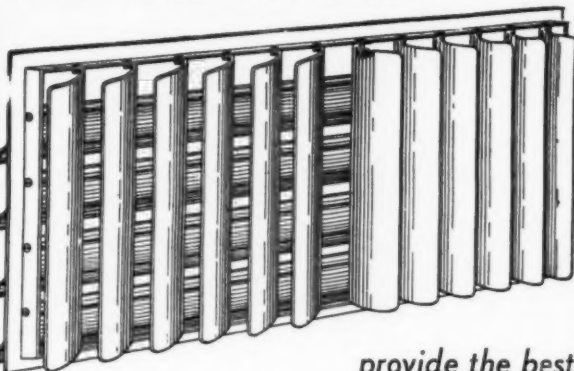
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A-J DIFFUSERS



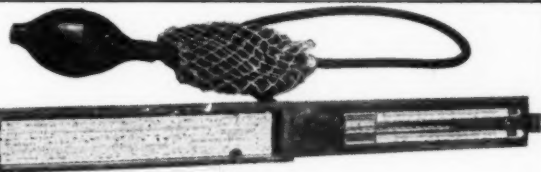
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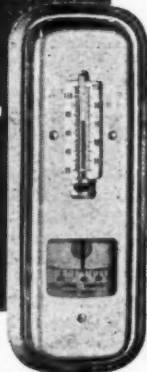
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INSTRUMENTS**

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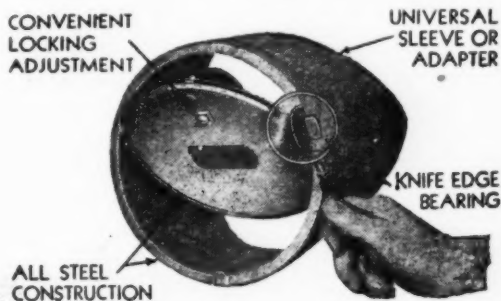
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6702 BRYN MAWR AVENUE, CHICAGO 31, ILL.

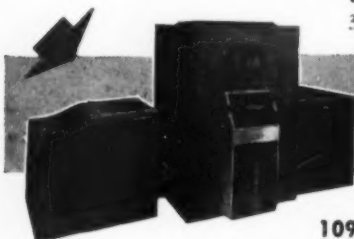
Any other adaptation we know of subjects belts, bearings or motors to excessive heat.

The motor can be protected from radiant heat through the use of a double cone. It is the motor bearings which need protection mostly. Glass insulated motor winding would stand up under intense heat, but this would not protect the lubrication in the bearings. When the bearing lubrication is dried up, the bearings stick and the motor stops.

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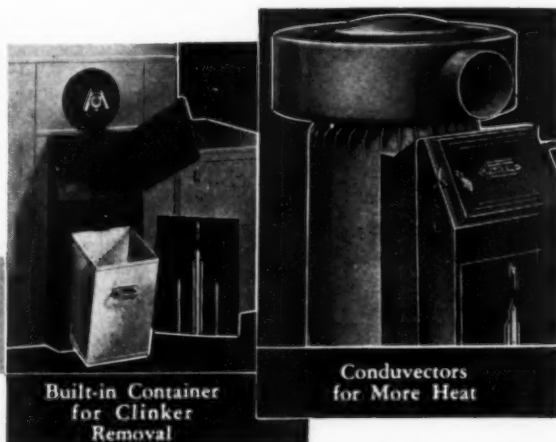
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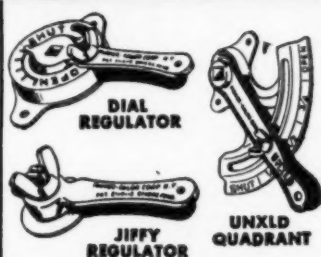
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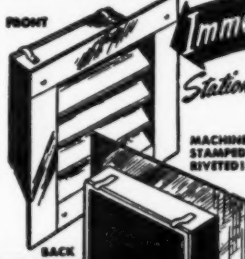
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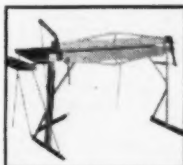
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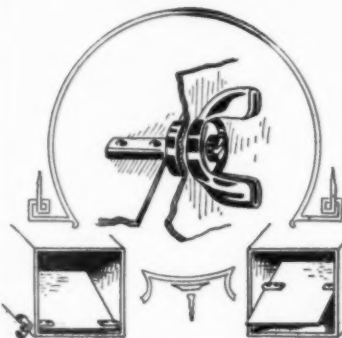
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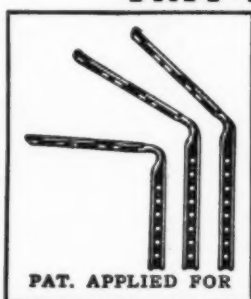
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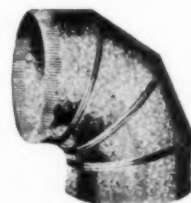
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MT. VERNON, ILLINOIS

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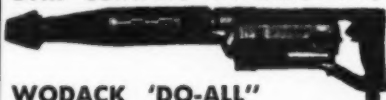
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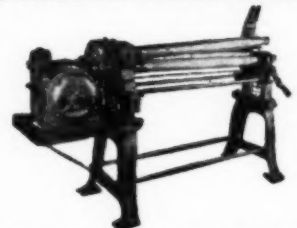
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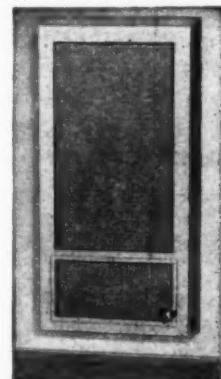
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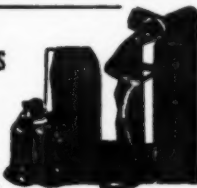
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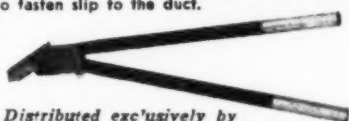
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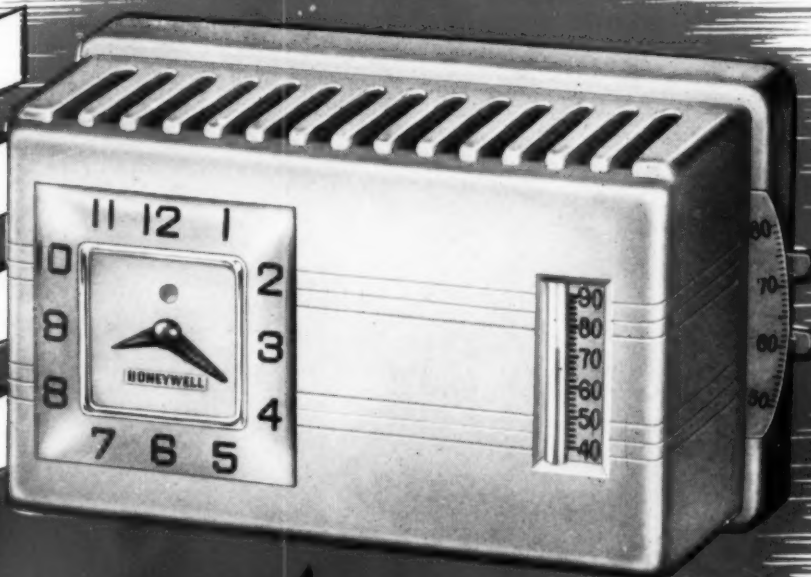
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HONEYWELL CLOCK THERMOSTATS

.....are here again!



THE NEW

Chronotherm

Check these ten outstanding DESIGN FEATURES

- 1 Simplicity of overall design. No troublesome intricate mechanisms. Exceptionally compact.
- 2 New bimetal element . . . assures more accurate temperature control, yet sturdy and dependable.
- 3 Fingertip external adjustment for day-night temperature settings.
- 4 Gradual morning pickup insures accurate temperature being restored to the daytime setting without overshooting.
- 5 Ease of time settings for day and night operation.
- 6 External fingertip wheel for setting clock . . . hands may be set as easily as a watch.
- 7 Low speed clock motor . . . the ultimate in quiet, accurate clock operation.
- 8 Clock motor provides 30 times more power than required.
- 9 Easily removable clock assures ready means of replacement.
- 10 Separable wall plate for easy mounting.

Here's *BIG* news and it's *opportune!*

Once again Honeywell leads the way—this time with the entirely new Chronotherm, the finest electric clock thermostat ever built.

Never has there been such a timely opportunity to build profitable sales. The fuel saving feature of the Chronotherm creates an immediate demand in every market—new homes, conversion jobs, replacements.

Take advantage of this economical feature, and remember that the Chronotherm offers you *THREE TIMES* the usual profit of a manual thermostat sale. More profit for you—less fuel consumption and lower heating costs for your customers—these features make Chronotherm the natural sales leader of the year.

Backed by powerful national advertising that will stimulate interest and create public acceptance—also a complete merchandising plan for you—the Chronotherm offers an opportune sales advantage.

Place your order now through your usual source of supply.

Our salesmen will soon be demonstrating the merchandising plan we have prepared for you. Minneapolis-Honeywell, Minneapolis 8, Minnesota. In Canada: Toronto 12, Ontario.

DELIVERIES NOW BEING MADE TO YOUR SUPPLIERS

Order your
SALES and DISPLAY HELPS
Today!

MINNEAPOLIS
Honeywell
CONTROL SYSTEMS

It's the Fit - makes the difference

Wherever you meet a modern Miss, you'll find her chic and well turned out. In her, as in a modern air filter, it's the fit (of her clothes) that makes the difference. Modern filters, too, conform to every curve and easily seal off all by-pass air.



NOTE THE

*Self-Seal Edge!**

NO. 200 SERIES

Scientifically designed to filter all the air. No settling, no packing down, no by-pass possible.

**Another Exclusive
Research Filter Feature*

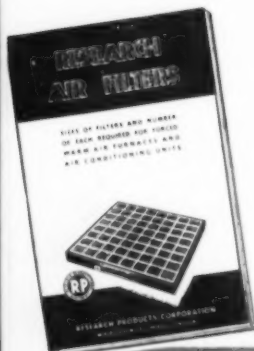
Free

host of dealer help including direct mail pieces, letters, ad mats, displayers and a catalog showing filter sizes for most units yours at absolutely no cost.

RESEARCH AIR FILTERS

Fit in a Jiffy — no By-pass possible

To go modern means to streamline efficiency and in this better, modern air filter, efficiency is the "buy" word. Nice to handle Research Air Filters are made, not of waste materials, but of a series of fiber sheets, slit and expanded to form the best dust trap made. Fits any holding frame, no matter how warped or battered and delivers a 93% dust, 99% pollen removal efficiency at a lower air flow resistance buildup.



RESEARCH PRODUCTS CORPORATION
MADISON 3, WISCONSIN